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SOUTHERN TEXTILE BULLETIN

VOL. 34 CHARLOTTE, N. C., THURSDAY, AUGUST 2, 1928 NUMBER 23

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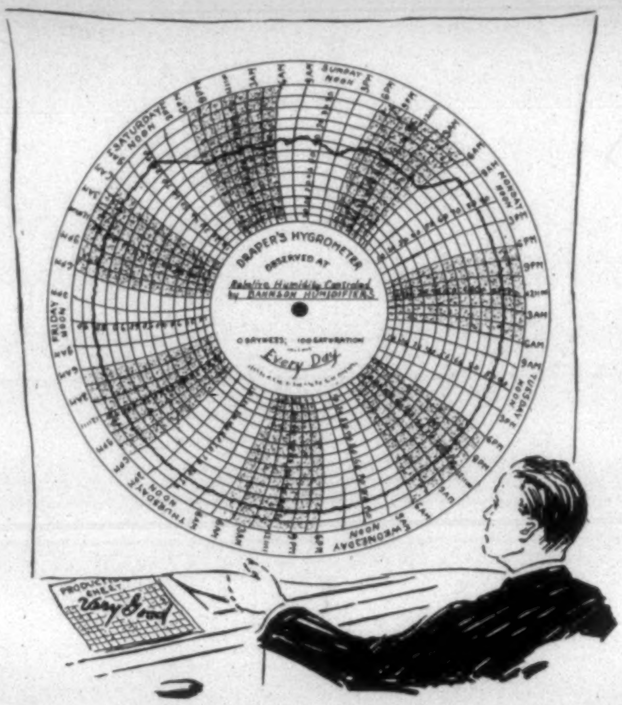

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Classified Index to Advertisers Page 36

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AUGUST						
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"New industries only a few months ago were locating here at the rate of one every five days. Now the rate is one every four days."

HERE in Piedmont Carolinas every index shows an accelerating rate of business progress.

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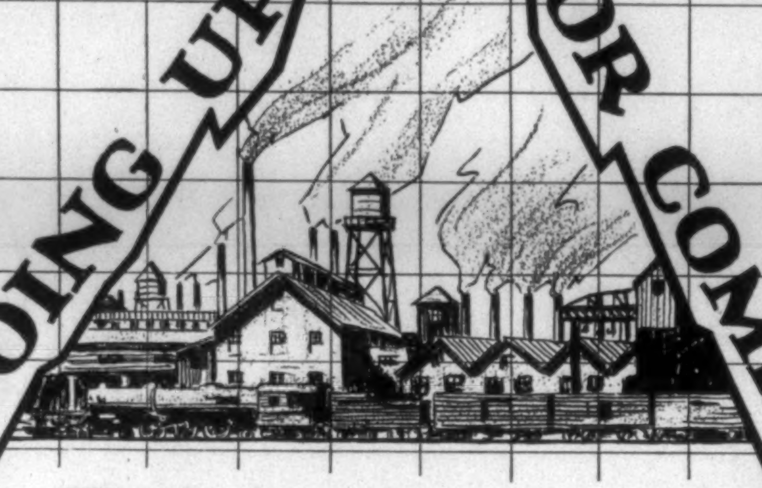
OVERHEAD

GOING UP OR COMING DOWN?



THAT wavering line on the cost chart that *should* travel Southeast, but so often takes a Northward course, is frequently made up of a multitude of items among which loom POWER—LABOR—OIL!

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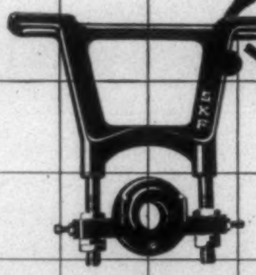

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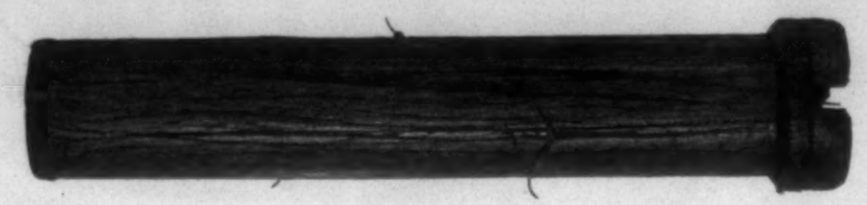

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NOW READY FOR SHIPMENT *Dulesco Crown Brand Rayon*

A NEW AND SOFTER RAYON YARN WITH AN INHERENT DULL NATURAL LUSTRE

PLANNING years and years ahead, our laboratories have developed and perfected Dulesco, a new Crown Brand yarn that is extremely important to the expansion and success of the rayon industry in America. It will extend the art of rayon knitting and weaving to an unprecedented degree. It will permit the development of new textures and new textiles. It will increase the style appeal and the general satisfaction of all rayon merchandise, knit or woven.

In 1928 there will be on the market frocks and fabrics, underwear and hosiery—favored for smartness, colors, suppleness, astonishing service—possible because they are made of Dulesco Rayon. Naturally you ask what are the superior qualities of this yarn.

1. *Subdued lustre.* Either knitted or woven, Dulesco has a subdued lustre that makes it softer and richer in appearance than anything ever known to the rayon industry. The delustred effect is inherent in the yarn. It is therefore unnecessary to delustre it after manufacture into cloth, thus saving a costly step in the process of finishing.

2. *Permanent finish.* A finish that is unaffected by repeated washings. A soft lustre that maintains a permanent degree of aristocratic quality.

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TRADE MARK
THE VISCOSE COMPANY

SOUTHERN
TEXTILE BULLETIN

PUBLISHED EVERY THURSDAY BY CLARK PUBLISHING COMPANY, 18 WEST FOURTH STREET, CHARLOTTE, N. C. SUBSCRIPTION $2.00 PER YEAR IN ADVANCE. ENTERED AS SECOND CLASS MAIL MATTER MARCH 2, 1911, AT POSTOFFICE, CHARLOTTE, N. C., UNDER ACT OF CONGRESS, MARCH 3, 1897

VOL. 34 CHARLOTTE, N. C., THURSDAY, AUGUST 2, 1928 NUMBER 23

Color[*]

By E. W. Pierce, Ciba Company, Inc.

COLOR is one of the most important properties of matter; it is, in fact, the one property on which we depend for our knowledge of the world about us. The form of objects is only distinguishable to our eyes by the contrasts existing on different parts of their surface and with their backgrounds.

A color is not a constant thing at any time, but is dependent on the amount of light it receives, as well as the manner it reflects that light back to our eyes. Let us take a perfect red billiard ball as an example: the casual observer would say it is a red ball, a more critical colorist might add that the color was a bluish scarlet, but an artist would know that the true color of the ball existed only on a small part of its surface — a tiny crescent-shaped streak, on one side of which the color must be toned with black and on the other with more and more white until a spot was reached which is called the high light. Now let us apply this observation to work with which we are more familiar.

Suppose we dye at the same time the skeins of the same count, but differing greatly in the amount of twist. When they are dried and ready for inspection we show them to one of these supercritical color passers who will tell us in no uncertain words that they do not match each other by a mile (or some other equally accurate measure of color). In one sense they do not match; that is, if we are trying to obtain absolutely identical color impressions from two surfaces that are different physically. The yarn that has the greater twist has also more high lights that mix with the true color and possibly also more shadows, with the result that the color is flatter and grayer than the other. In cases like this common sense must prevail over idealism, and thus save another dyer from the madhouse.

High Light and Shadow.

High light and shadow are two elements that enter into the effect of a color on the eye, but they are the gross form of a condition that extends down into the microscopic world. Every little particle of matter has its own high lights and shadows which affect the true color, and every color we observe may be analyzed into three elements, viz., reflected light, absorbed light and dominant chromatic hue. To put this in plain language, everything we see is a mixture of white, black and color.

White is a total reflection of all the light that falls on an object. Black is a total absorption of all light, while varying proportions of white and black produce the whole gamut of neutral grays. We must consider white, black and gray as color because they are the components of all colors we see.

True color, or chromatic hue, is suggested by the solar spectrum, but this is not very accurate and we are forced to construct an ideal spectrum to give the proper values. The solar spectrum lacks the tones between red and violet—our orchid shades, lavender and heliotrope, rhodamine and fuchsine shades—so we will construct in our mind a circular spectrum with all colors of equal value as colors and fill in the open space between violet and red. We start with 0 degrees on the circle for red, shade over to orange at 60 degrees, yellow at 120 degrees, green at 180 degrees, blue at 240 degrees, violet at 300 degrees. The colors between these fixed points are just as pure, just as important as the arbitrary six that mark the principal tones. No one has ever seen nor can construct anything to show these pure 100 per cent colors; they must remain theoretical quantities. Now we will work in from the circumference of this circle toward the center, where we will place 100 per cent white, and the entire circle will show all the possible combinations of the pure colors and pure white radiating from the white center to the full hue at the circumference. Again, no one has ever seen these tints in complete purity. Why? Because every color we see is also effected by a greater or less amount of black. Even a pure dye like Rhodamine or Chinoline Yellow has a little of the black element in it. I do not mean chemical or physical impurities, but that some of the light that falls on it is absorbed and is not reflected back to our eyes as either white light or as color.

Collecting All Known Colors for Study.

Now if we make a thousand of these circles and to each add a thousandth part of black more than the one preceding we will find the diameter decreasing till the last one is only a point of black. Trim away the outside and the pile will form a cone which contains all the colors the human eye can perceive, and we are ready to admit that our imagination cannot conceive of any other colors than these.

This is not high-brow scientific stuff; it is merely the making of an orderly collection of the colors we know in our everyday life. Now that we have them collected let us study their relations.

The first circle, containing no black, will serve well. The red is opposite green, blue opposite orange and violet opposite yellow, and each color on the circumference has an exact opposite. The colors opposite each other will neutralize each other completely and produce white, and all mixtures of two colors will lie on a line connecting them. How do these rules affect our daily application of dyes? Red neutralizes green and produces white, yet here I show you a skein of wool dyed with Fast Red and one dyed with Acid Green, and a third with the same two dyes dyed together, producing a black. This seems to contradict the theory, but it really does not; it really confirms what I stated previously—that all the colors we know contain black, that is, absorbed light. The pure red and the pure green have neutralized each other, and the black remains unchanged.

Let us consider pure orange. Now try to make it by mixing red and yellow. Draw a line from red to yellow and it will fall a third of the way inside of the circle, showing that some color is lost. Now if we are dealing with commercial dyes there will also be some black left over and the mixture of red and yellow has given us only a dirty orange instead of the pure shade. By using a yellower red and a redder yellow whose connecting line comes nearer the orange point on the circle, the result will be better. We can match shades by the use of three dyes; we can make gray from red, yellow and blue. All dyers are using subconsciously the laws of color, but few know why they do so. A study of the relations of color will prove to be a great help.

Experiment With Filters.

There are many phenomena of color which need explanation. If we take three color filters—red, yellow and blue—and put one over the other we cannot see through them, but if we put them in separate stereopticon lanterns and project the three colors on a screen, then move them till all strike the same spot we will get a spot of white light. In the first case, each colored glass held back certain rays and passed the others, with the result that all rays were stopped before they got through the three glasses. In the second case, each glass supplied certain rays and the total went to make white light.

In dyeings on any material we are dealing with both reflected and transmitted light so that judgment and experience are better guides than theory. Consider any dyestuff—the powder, the paste, the solution and the dyeing—all differ in color and yet the color phenomena are all produced by the same chemical substance. However, a little of the theory judiciously mixed with your own practice may be a benefit in the long run.

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[*] Paper presented before Piedmont Section, American Association of Textile Chemists and Colorists.

Textile Distribution Through German Stores

Washington, D. C.—There are approximately 100,000 textile retail stores in Germany, it is estimated, which figure does not include department stores, the very small stores in the country, nor the shops which carry textiles as a side line, and assuming the German population to number 64,000,000, there would be an average of one textile store for every 640 persons, according to the Textil-Zeitung, the Department of Commerce is advised by Assistant Trade Commissioner A. Douglas Cook, Berlin. Competition in the German textile retail trade is strongest in the small towns.

New Yarns and Modern Machines

In many cases the same problems arise, whether we are considering the knitting of artificial silk stockings or fabrics. Often both these very different products are produced on the same system, by means of circular knitting machines, and in consequence we should expect that difficulties which were apparent in one case would be apparent, with slight differences, in the other. In these days, when nearly all girls and women wear silk stockings, the production is carried on in well-organized factories, but perhaps we do not realize to what an extent specialization has been achieved in order to reduce the complexity of the problems for the individual manufacturer. Ninety per cent of the silk stockings that are used in this country are made on high-speed automatic circular machines in factories capable of making nothing else, and frequently only capable of making the stockings in artificial silk.

The yarn is bought, or was bought until recently, ready wound on the bobbins suitable for placing in the creel of the knitting machine. It is then knitted up into long lengths like links of sausages, each unit of the length being a stocking almost completely finished, apart from the two small operations of joining up the toe and linking the welt. The manufacturer will usually send the stockings outside to be dyed and boarded, after which they will be returned to him to be examined and packed. By this system, which operates all over the country, hosiery manufacturing can be reduced to a comparatively straightforward and simple series of three operations. The degree of specialization is extended beyond the manufacturer to the selling of the hose, for the latter is almost entirely in the hands of middlemen or merchants. The selling of the hose falls into clearly defined classes or lines, each with a different price. The great increase of specialization throughout the industry is necessary where a mass-produced article, made in many factories, is concerned.

Under such conditions of manufacturing two problems have to be solved by the individual knitter—how to improve the selling points of the hose and how to reduce the cost of production. It has been stated that lines are clearly marked, and, naturally, the margin is smallest in the cheapest classes. Nine shillings per dozen pairs of artificial silk stockings does not allow more than a few pence a dozen profit, and the aim of almost every manufacturer is to add sufficient selling points to his lines to get them into a higher-priced class. But competition is so keen and the limit to improvements so clearly defined that the most a manufacturer can hope to do is to put in the very best quality of material and workmanship.

One of the chief developments during the past year has been the fitting of pointed heel attachments to knitting machines. The old artificial silk stocking was always turned out with a reinforcement at the back of the heel with a square top. The corners of the square have been removed and this produces a more graceful effect when the stocking is worn. This development, however, introduces no great difficulty to solve. A second development has been in the knitting up of a new kind of artificial silk, of a softer feel and of a duller lustre, resembling worm silk. These yarns are well represented by Courtauld's Dulesco and Escorto. To those unaccustomed to the handling of these new yarns trouble immediately crops up. They are far more likely to cause press-offs through broken filaments. The yarns are much more susceptible to tension, particularly in the finer counts like 150 deniers, and ringing of the hose is the consequence fo insufficient care in winding. To prevent all variations of tension the knitting machine has to be fitted up with a better form of yarn feed. These are some of the problems to be solved when working the newer yarns. A third development lies in the use of fine-gauge machines, such as the 260-needle Scott and Williams, the Maxim and Standard Trump. It is essential to see that the size of the artificial silk corresponds to the needle gauge, and in most cases the yarn is about 150 deniers, where before it would be 200 to 300. This decrease in the denier size of the yarn increased the difficulty of working, for the knitting speed is not reduced in any way, and unless great care is taken the slight variation of tension of the yarn as it is pulled off the bottle bobbin is sufficient to give ringing of the hose by the formation of tight and slack courses of stitches. Knots are more likely to cause bursting of the fabric at the needles.

Costs of Production.

To sum up all the troubles due to adding new selling points in the knitting of hose (or fabric for that mattre), we have to prevent the formation of broken filaments and to reduce the effect of broken filaments when present. We have to prevent all variations of tension, both in the winding of bottle bobbins and on the knitting machines, for such variations cause ringing round the hose. Finally, we have to prevent all knots in the winding. We will leave the attempt to solve these problems until after the general review of the new conditions of hosiery manufacture.

The second question which the manufacturer asks himself is "How can the cost of production be reduced?" It must be remembered that the factories will use from 500 to 10,000 pounds of artificial silk a week, and that even a very small saving will amount to a large sum at the end of the year. In the first place, most factories save several pence a pound, about 5d., by winding their artificial silk from the hank on to bottle bobbins on their own premises. Ten years ago it was something of an undertaking to install silk winders, owing to variations in the reeling of the hanks, and to the presence of slubs and knots, but this is different now, for the artificial silk makers deliver bundles of yarn which are remarkably uniform and give very little trouble indeed in the winding. The makers of the winding machine leave it properly adjusted to work fine yarns such as 150 deniers, and if necessary show the unskilled operators how to produce perfect winding right from the start.

A second reason for the manufacturer winding his own yarn is that it is essential for him to utilize every possibility of reducing his costs by obtaining the winding which he finds most suitable for his conditions. For instance, during the last few months it has been discovered that it pays to use large bottle bobbins holding over one pound of artificial silk. These bobbins are 4 inches diameter and 10 inches high; and it is obvious that when operators work knitting machines from such a yarn supply they have much more time to look out for the mechanical faults of the machines, owing to the little time required for changing the silk supply bobbins. Commission winders and producers have not realized this point yet, though the more enlightened ones are attempting to supply artificial silk on larger bobbins than previously. A third possible way of reducing costs is by using specially treated bottle bobbins melanited with a smooth, elastic substance. This prevents bruising of the neck of the bobbins. It is impossible to prevent operators throwing, or at any rate dropping, bobbins, and the consequent formation of splinters is a frequent cause of filament breakage, which leads to press-offs. The base of these new bobbins is given a felt-like surface, to enable the yarn to be knitted off right to the base of the bobbins. In addition, the felted cone being dark enables the operator to see when the bobbin is running down, even from the end of a gang of machines.

Artificial silk press-offs need not be sold for waste for a few pence a pound. There is now available a special machine for recovering this yarn. A machine of six spindles worked by a young girl without great experience can wind back 30-80 pounds a week of artificial silk from press-offs direct on to bottle bobbins for 4d. to 8d. a pound. This yarn can then be knitted up into first-quality hose, resulting in a saving of from £7. 10s. to £20 a week. This type of machine is in use in nearly all large factories. A still more recent development is that both the cashmere and artificial silk can be recovered from plaited hose.

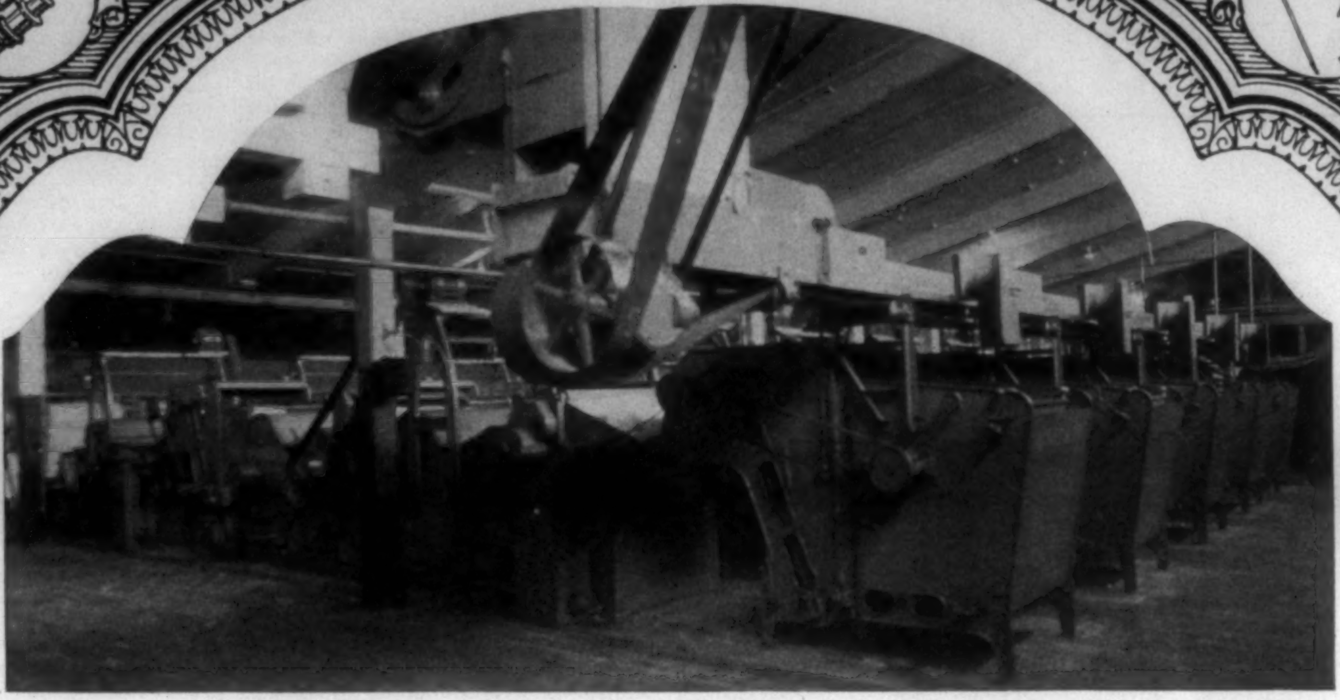
A further development lies in the installation of dyeing plants. There is no doubt that this pays very well for the large factories. The rotary drum dyeing machines occupy little space and do not require expensive installation and supervision. The factories where such a plant is a paying proposition are, however, at present limited to the large works.

Let us return to the problems introduced by the use of newer yarns and finer gauge of machine. Filament breakages can be prevented entirely by reducing the friction on the yarn to a reasonable minimum during winding, and by seeing that there are no rough or sharp edges on the passage of the yarn in the knitting machine. On the best type built there is nothing to cause and chafing, and the only question that arises is: How can the effect of broken filaments existing in the hank as it is delivered from the producers be reduced? Experience has shown that if the yarn is lubricated with an oil mainly of a vegetable basis the trouble is reduced considerably. In fact, all silk used in high-speed machines should be lubricated with a special oil. There are two methods of oiling. The older one is to run the silk as it comes from the hank over a drum turning in the oil. In some cases the drum is replaced by pieces of felt dipping into an oil bath and sucking the oil up as in the case of a lamp-wick. In the second method, which is more popular because of the ease with which it is applied, an oil is used specially designed to soak through the bundles of silk. This soaking is usually done over-night, and though the method seems very crude, yet the results are excellent. Not only does oiling reduce the number of press-offs through the broken filaments, but it makes the whole process of knitting artificial silk much easier. This is partly the result of softening and binding together the filaments and partly the result of oiling the needles. At any rate, oiling of the silk is one of the best methods of preventing knitting troubles with the newer yarns.

With regard to variation of tension which leads to rings at regular intervals round the stockings, due to tight and slack courses of stitches, there are a number of problems to solve.

1. The silk may be stretched as it is wound on to the bottle bobbin. The trouble is that if the bobbins are revolved during winding at a constant speed the yarn is wound on much slower at the nose than at the base of the conical portion of the winding. This change in the speed of the yarn will cause a difference of tension. The tension may be excessive at one moment and within a safe limit at the next, so that a length of artificial silk pulled off a bottle bobbin will have parts corresponding to the position on the cone of the winding where the yarn is stretched or strained, while at other parts the yarn will be in normal condition. Stretched yarn is always stiffer than normal yarn, and unless specially treated this stiffness or locking of the cellulose will persist during the knitting process, so that where the yarn is stiffer the loops knitted will have a different appearance from the fabric knitted from the softer parts of the same thread. The obvious remedy is to slow down the bobbins when winding the outside, so that the yarn is always pulled off the hank or bobbin at the same speed. In such a case the tension will remain constant throughout the winding, and there will be no stiff and soft portions to

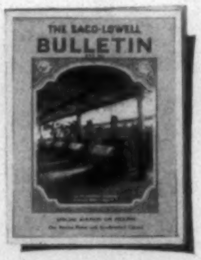
(Continued on Page 26)



Langley Mills Install Saco-Lowell's New One-Process Pickers With Synchronized Control

THE Langley Mills, Langley, S. C,, have changed their whole mill onto Saco-Lowell One-Process Picking. Five new One-Process Lappers have been installed, as illustrated above, and are now running night and day to the complete satisfaction of the mill.

Complete details of this new machine, with synchronized control, are published in the July issue of the Saco-Lowell monthly "Bulletin." Watch for your copy. If you have not been in the habit of receiving copies regularly, write for this special edition and ask to have your name put on the mailing list.



THE SACO-LOWELL
BULLETIN

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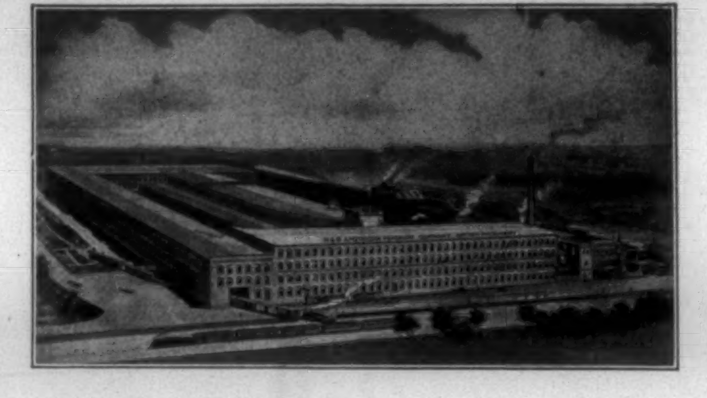

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Manufacture of Two and Three-fold Sewing Cotton

FEW people will have taken the trouble to notice that many a time the sewing cotton used is a coarse two or threefold yarn; in fact sometimes as coarse as 10s threefold. The question is: How are these yarns made and finished?

Above all, it should be noticed that sewing cotton requires a high degree of evenness. Obviously, it is easier to obtain an even sixfold yarn than an even two or threefold, for the irregularities of the single ends are to a great extent compensated against each other in a yarn containing a greater number of single ends to make up the thread. We need not enlarge on this fact, seeing that a similar state of affairs exists in the cases where several ends are put up at the back of the drawing frame in cotton spinning, in order to get an evener sliver. Now, it is well known that many of the sixfold sewing cottons are made up of combed yarn, and it is clear that a combed yarn would under ordinary circumstances be still more imperative in the case of two and threefolds, seeing that combed yarns are usually more regular than those yarns which are only carded. Still, it should be noted that many two and threefolds are made up of uncombed cotton yarn. Of course, if uncombed cotton yarns are used for the purpose, everything must be done to get the yarn very clean, and as regular and even as possible.

The counts of yarn that come into consideration for the purpose may vary from 10s to 120s, but 40s is generally the limit. For our purposes even the limit of 40s will never be reached, but we will give the description of the processes on the basis of all the counts from 10s to 40s, for the sake of completeness.

The counts that are most in demand are the two and threefolds of 16s to 24s, which are usually spun on ring frames, just the same as the other counts mentioned above. Finer counts are often spun on mules, but we are not concerned with these counts.

The single yarns must be spun right hand twist, with the turns per inch as per the following table:

C'nts	T'ns per in.	C'nts	T'ns per in.
10	10	24	17
12	11	26	18
14	12	28	19
16	13	30	20
18	14	32	21
20	15	36	22
22	16	40	23

We lay stress on the necessity of not deviating too much from the above turns per inch, if at all, for these turns are not only chosen with a view to getting the necessary strength into the single yarn, but also with a view to getting a "preparing single" which will give a good-looking appearance to the sewing cotton in the finished state. In many cases it will be necessary to put in rather more twist for the sake of the necessary strength, in which case the decision must be left to the judgment and discretion of the manager who must see that he finds the golden path of obtaining the most successful product—that is the product that will best answer the requirements of the clients. In the various departments of the spinning mill everything must of course be done to contribute to the getting of an even and clean yarn.

When the yarn has come from the spinning frame, it must first be steamed. In many cases the old-fashioned iron steaming chest is employed, but in all cases it is important to watch that the steaming process is a thorough one, to penetrate the yarn well. The steaming chest is often replaced by a more modern appliance, the vacuum steaming cottage.

After steaming the yarn, the skips are placed in the yarn conditioning cellar whcih is kept damp and cold. The floor of the conditioning cellar is covered with bricks having spaces of about ½ inch between them, the cellar being kept under water. The water must not quite reach the upper face of the bricks. The water is taken up by the porous bricks and it slowly evaporates charging the atmosphere of the conditioning cellar with moisture. The yarn must remain at least two days in this cellar. This conditioning process is of great importance and must on no account be treated with neglect. We repeat that care must be taken to have the cellar always moist and cold, otherwise it is useless to expect good results.

The yarn is then taken from the conditioning cellar direct to a quick-traverse winder, which must have clearing and folding arrangements. As this machine is of the utmost importance, it is necessary to describe its function in detail. The first thing that will strike the uninitiated when seeing this machine, is the folding arrangement (which allows several ends to be combined into one). The machine is therefore often called "doubling - winding frame," and as the machine is made on the quick-traverse system (in contradistinction to the old type of slow-traverse winding frame), it is called "quick traverse doubling winding frame." In this machine two or three ends are put up together for each spindle, being placed in the creel below the spindles, and running off from ring spinning bobbins of the ordinary type. In sewing cotton it is essential that all the ends in the thread have exactly the same tension, or the yarn will be much weaker than it should be. This is easily understood if we consider that in an even yarn, all the ends must bear the same strain. If we have three ends of yarn say, each one yard long, and if we insure that they are at the same tension and therefore of the same length, and if we try to break them, then we shall have to use a greater effort than if we were to try and break a single end of the same yarn. If the yarn is made up of three single ends of different tensions, and if we try to break it then the end having the greatest tension will have to bear all the strain, and we can then break this end as easily as we broke the single end before. Only when this end has been broken, we shall get the strain on the second end, which will then break just in the same way in which the first end broke. There remains the third end, which will of course break just as easily. It is clear then that a thread made up of ends having uneven tension will be much weaker than one with ends of the same even tension all through. Hence the necessity of the doubling-winding process.

Besides, the ends of the thread must be of the same tension for another reason: if the ends are of different tension, then the ends having a less tension and therefore a greater length will wind around the more taut ends in a kind of corkscrew fashion, thus giving rise to a very serious fault in sewing cotton, the yarn not coming out well rounded, and having a bad appearance.

Further we have to consider the question of knots. If the yarn is doubled from ring frame bobbins in the doubling frame, then the ends are single in the creel, and if a breakage occurs, we have more waste, and also the very objectionable bunch knots which render the yarn absolutely unfit for use as sewing cotton ,as bunch knots will not go through the eye of the sewing needle. In the doubling winding frame precaution is taken to stop the spindle instantly on the breakage of an end, and to allow the broken "single" end to be pieced up as easily as if we had to make a bunch knots.

Having thus demonstrated the necessity of the introduction of the quick traverse doubling winding frame previous to the doubling frame, we must consider further mechanisms which are fortunately combined in the same machine, chief of which is the device for having the yarn clear of all impurities before it gets into the doubling frame. For this purpose the doubling winder is fitted with clearing arrangements, thus doing away with a separate "clearing frame." The coarse "slubs" are first eliminated from the yarn by means of a slub-catcher. This slub-catcher may be developed in such a fashion that it serves at the same time all the purposes of a yarn clearer. It should then be able to remove not only slubs, but also any other thick or soft places in the yarn, dirty places (caused by clearer waste having gone forward with the yarn), badly made piecings and knots, and all similar imperfections. The best types are those with slits, the slit being formed by the edges of two plates which can be adjusted with reference to each other, thus altering the space between the edges, and therefore the size of slit. The plates are made in such a way that any adjustment of one single slit will at the same time adjust a number of other slits in exactly the same way, thus doing away with the necessity of adjusting every single slit separately.

The yarn must then pass through a tension device which will insure exactly the same tension being put on every single end. This is very important (as we have explained above), and it is a proposition which is not always carried out successfully, for most tension devices will soon get clogged and cause the yarn to pass through at a less tension. Any tension device which allows such variations, is useless for any purposes, and particularly useless for the purpose of the manufacture of sewing cotton, as it is then impossible to get all the ends in the sewing cotton at the same tension and of the same length. To insure absolute correctness, the tension appliance must be self-clearing. As a rule the tension is obtained by passing the yarn over a flannel-covered board, a method which does not give particularly exact results as the flannel soon wears. Moreover, the device does not allow of exact regulation of the tension. An improvement on this method is the roller covered half with flannel and half with tinned sheet. Another type is the revolving plush roller which is driven from any convenient shaft in the machine and which slowly revolves in the direction opposite to that in which the yarn goes forward to the spool. There is also a traverse arrangement, equalizing the wear on the plush covering. The ball drag is a more recent arrangement, and it is intended to take the place of the arrangements described above. It consists of a series of porcelain cups in each of which a small metallic ball revolves. The cups are grooved at opposite places for the yarn to pass in and out. The ball rests on the yarn and imparts the necessary tension to the yarn by its weight. A separate ball tension is necessary for each separate end. The system is very good theoretically, but in actual practice it has been superseded by the disc drags. A good disc drag consists of a bracket attached to the traverse rail of the winding frame. This bracket carries a loose metal washer fitting into a horizontal recess of the bracket and revolving on a pin. The pin is prolonged upwards and carries a brass washer cup which can be weighted to the requirements of the drag by means of suitable washers. The yarn runs between the washer mentioned in the first place, and the brass washer cup; the whole disc arrangement is turned round by the yarn passing through. The drag is put upon the yarn by means of the friction which the lower washer has to overcome. The system has two drawbacks: firstly, the friction which the lower roller has to overcome cannot be regulated to such a nicety as to be always exactly the same for all ends, and secondly, the arrangement is not self-clearing, the latter point being of the greatest moment, as it is essential for the best work (which is only just good enough for our purposes.

The best tension is doubtless the so-called "Perfect" washer tension and yarn clearer. The lower braking surface of this device is a solid and almost unbreakable of piece glazed porcelain, forming at the same time the body of the device. It is securely fixed to a rod and has

(Continued on Page 30)

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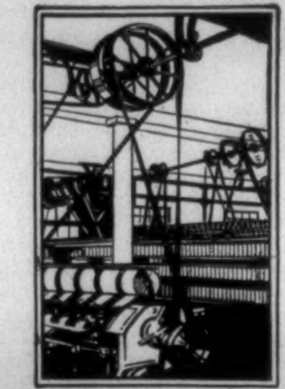

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Causes of Sleazy Knitting in Full-Fashioned Hosiery

SLEAZY knitting or, called by a more dignified term, crepe spots, in full-fashioned hosiery is the most serious evil confronting the hosiery manufacturer today. Every hosiery manufacturer who is honest to himself must admit that he had sleazy goods at one time or another, says H. C. Roberts in Black and White, published by E. F. Houghton & Co.

More is known about the results of sleazy knitting than is known about the cure. A careful survey of sleazy knitting in several hundred full-fashioned hosiery plants has been conducted and workers and overseers have been interviewed in all of these plants.

Irregularity in Japan Silk.

The majority of persons interviewed stated that the improper condition of the silk was the primary cause of sleazy knitting. Further analysis of the term "improper condition of the silk" shows that in many instances it is inherent in the silk itself.

The use of the seriplane as a means of grading silk (see "How Seriplane Inspection Simplifies the Grading of Raw Silk," Black and White, Textile Edition, Volume 1, No. 2) has made it possible for the silk dealer to deliver silk of a greater degree of evenness than was possible by the former methods of grading. Unevenness and irregularity that existed in only the poorer grades a few years ago is found in the best grades of silk suitable for hosiery tram to-day. These irregularities and unevenness are manifest in thick and thin places in the silk, and either irregular distribution of the gum content or unevenness in the hardness of the gum. Nothing can be done to overcome the thick or thin spots (coarse and fine places), but proper soaking, with the correct soaking oil, will do much to overcome the irregularities due to uneven hardness of silk gum. It is unreasonable to expect a soaking oil to entirely overcome a condition where there are extremes in hardness and softness of the gum.

Soaking Oils

The keen competition in full-fashioned hosiery has compelled manufacturers to cut costs in all directions and this has led them to use soaking oils which are inferior in quality and low in price.

Many of these oils do not have the property of even penetration, consequently some parts of the skein are softened to a greater degree than others. This means that when the silk is knit certain portions will be drawn about the needles with perfect symmetrical loops and others will be distorted. The distorted loops are seen as "irregularities" in the knitted fabric, and are called sleazy stitches.

Very few hosiery manufacturers are equipped to throw their own hosiery tram but have it done for them by a throwster on commission. Most throwsters seem to think that the more weight of oil they can incorporate in the silk the better they have done their work. Unfortunately this is not true.

We found several cases where boil-off of the silk was high, due to the large amounts of oil added by the throwster, and much sleazy knitting was produced. This was not apparent while the silk was in the grey but after the boil-off. The reason for this was that the large amounts of soaking oils had increased the yarn diameter and after the boil-off the gum and oil were removed. The silk had lost as much as 26 per cent to 27 per cent, and had lost an even greater amount in yarn diameter as compared with a normal average gum content of 19 per cent for white Japan silk, plus reasonable soap and oil. This left a yarn with too small a diameter for the size of the loop.

Another cause of sleazy knitting in hosiery is the use of poor soaking oils which remove part of the silk gum in the soaking. This produces silk of uneven yarn diameter and stiffness. It is true that oils of this character increase the production of the winding room but this is done at the expense of the fabric.

Caused by Uneven Twist

The silk throwster can be blamed for producing some of the sleazy stockings, aside from those primarily due to the soaking oils. Should there be a variation in the twist of the tram there will be a variation in the appearance of the goods due to a greater contraction of the threads where the twist is greater. Much of this variation in twist is caused by the variation in the speed of the twister spindles. Should there be slippage of the belt that drives the spindles, or should the spindles be brought up to speed too slowly, there is bound to be a variation in the twist. This might amount to a slight variation, but nevertheless the knitted stitch will be distorted in spite of all the tension applied in winding or knitting.

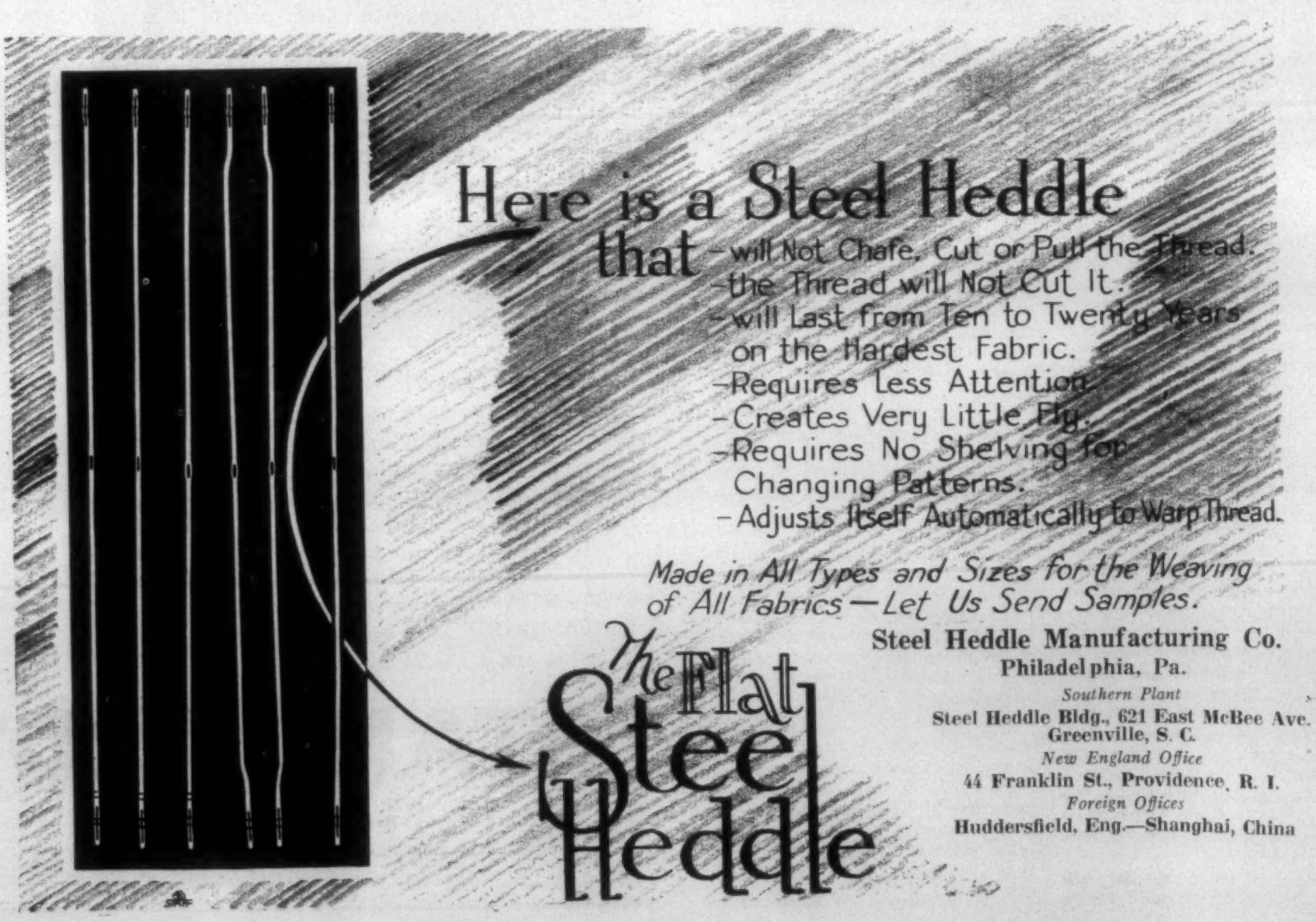
Winding.

It is unanimously agreed that dry silk is one of the prime causes of sleazy knitting. Dry silk is caused by defective backwinding solutions. This may be due to too much tension on the backwinding machine which causes a tight, hard cone that will not pay off the yarn evenly when fed to the knitting machine. Often the cones are wound with the layers too close. There is a general concensus of opinion that there should be 1-16 of an inch clearance between each wind of the thread.

A hard glazed gainer belt will frequently cause a slippage in the winding of the cone, Unless the cone is wound evenly one cannot expect to obtain a perfectly knitted fabric.

A special mineral tanned belt makes the best gainer belt because it has the greatest coefficient of friction and will not slip. Further-

(Continued on Page 29)



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The Preparation of Rayon Yarns for Weaving

THE general processes and machines employed in the preparation of yarns spun from staple fibres, such as cotton, linen, or wool, for the looms are unsuitable for artificial silk yarns.

Manufacturers have from time to time tried, with varying degrees of success, to adapt existing preparatory machines, that were originally designed for dealing with staple fibrous yarns to meet the requirements of artificial silk.

The chief reasons for the unsuitability of these machines are due to the many peculiar characteristics and physical properties of the yarn, which are entirely different to those of yarns spun from natural staple fibres.

Machines used in the preparation of rayon yarns for the loom have been specially designed, to meet the requirements of these characteristics and physical properties that are peculiar to threads of rayon. The properties that differ from those threads spun from natural staple fibres are many.

The strength of individual rayon filaments in many yarns are generally stronger than good American cotton fibres, and in some instances stronger than many grades of wool fibres, but the ultimate strength of the thread is less when compared for equivalent counts. One of the reasons for this deficiency in strength is that yarns for weaving purposes usually contain only a small number of turns per inch, and the filaments being very smooth, almost like a glass rod, there is very little frictional resistance between the filaments composing one thread.

Most varieties of rayon yarns are subject to undue elongation when abnormal amount of tension is applied. It is permanent extension, the yarn having little elasticity or tendency to recover its original length after tension is removed. When tension is applied gradually, the extension is very small up to about half the breaking tension, after this there is considerable extension with very little increase of tension. It is here where the individual filaments begin to break until the thread is completely broken.

The elasticity of a thread subjected to a tension up to breaking point is very small compared with yarns spun from natural fibres, and is only about 5 per cent of the extension. If the yarn is subjected only to small extensions there is considerable elasticity, this requires the yarn to be worked in all the preparatory processes and in weaving with the minimum amount of tension if its elasticity, so vital to good weaving is to be preserved.

When yarns have been subjected to tensions beyond their elastic limit, permanent extension takes place, the filaments composing the thread become finer, the lustre of the thread becomes greater, it is less flexible, and the thread will show up when woven in the fabric as a bright end, or as weft in a bar of finer and brighter yarn, or as a bright pick which are serious defects. It is essential during all stages of yarn preparation to have suitable and uniformity of tension throughout.

Most varieties of rayon suffer in strength when in a wet condition, this requires a modified form of sizing operation, and one in which the tension on the yarn is relieved as much as possible while the yarn is wet with size. Sizing machines of a special character have been designed with a view to meet the requirements of this yarn, without being subjected to undue tension and friction during the operation. Yarns should not be worked in any of the preparatory processes in a damp condition, as it is so easily and permanently stretched, the filaments damaged, or broken, also if some portions of the yarn contain a greater percentage of moisture than others, the yarn is liable to be stretched in those places and will eventually show up as bright streaks in the woven fabric. Careful control of the temperature and humidity of the preparation rooms are essential if good regular yarn free from those bright places are to be obtained. Rayon has the peculiar property that when wetted out and tension applied, considerable elongation takes place, but when dried again it contracts and recovers its original length. This makes it necessary that extreme care is taken in regulating the tension of all the threads that are to form one weaver's warp, as in sizing, some threads may be slack and others tight during the operation, giving unequal tension of the threads on the beam in the loom.

The resistance to friction of rayon yarns is less than those spun from natural staple fibres, individual filaments are easily broken, in particular when the threads come into frictional contact with rough surfaces of metal or other material. If a yarn is subjected to excessive friction during any of the preparatory processes the loss in strength will correspond to the increase in friction that the yarn is subjected to. Wherever possible the yarn should not pass over a stationary surface, but should be guided by smooth revolving surfaces. Where it is impossible to provide these, porcelain or glass guides should be employed to reduce the friction on the threads as they pass over these stationary surfaces. Filaments that become broken by excessive friction during the preparatory processes give considerable trouble when the yarn reaches the loom, whether it is intended to be used as warp, or as filling, and will cause production to be impeded and the quality of cloth impaired. The filaments composing a thread being continuous, once they are broken they cannot easily detach themselves from the remainder of the thread, in the same way that a single staple fibre can, and in con-

(Continued on Page 24)

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Practical Discussions By Practical Men

Irrigated Cotton.

Editor:

Will you please tell me why irrigated cotton is not as good as regular Western cotton? And why it gives trouble in the mill.

J. T. S.

Advantages of Self-Stripping Cards.

Editor:

What are some of the advantages of the so-called automatic card cylinder strippers? Carder.

Answer to Pal.

Editor:

Why some bobbins raise themselves up after doffing is a question by Pal in a recent issue of the Bulletin. I would like to be given sufficient space to reply to this inquiry. There are many good reasons ro causes for this as follows:

1. An unbalanced bobbin, i. e., a bobbin which may be heavier on one side than on the other side.
2. A bunch of waste in the bobbin.
3. A bent spindle.
4. Spindle, ring and thread guide not properly set.
5. Spindle lacking enough oil.
6. Defective spindle base or bolster.
7. Ring traveler too heavy.
8. Cracked bobbins.
9. Bobbin not properly seated.
10. Defective rings.
11. Speed too high.
12. Bands too tight.
13. Bobbins too light for the yarn being spun.

There may be other causes, but I hope Pal will find the above information useful. Fall River.

Answer to Carder.

Editor:

Carder would like to know how close to set the agitator, and how to set it on cards which have this device applied? May Carder be advised that the proper way to set an automatic stripping roll on a card, is to use the quadrant gauge provided by the makers. With this adjusting instrument set between the roll hub and the carding cylinder wire, the wired revolving comb will be so adjusted that the stripping comb wires or pins on the revolving comb will be set to agitate into the card cylinder wire 3-64 of inch deep.

Experience.

An Answer to Contributor No. 31.

Editor:

The writer has noticed Contributor No. 31 and what he has had to say about what are we going to do with our brother overseers. Now, the point is, work them, if you can get results from them, on fixing and second hand jobs. I have worked some of them and found that they knew what to do but would not do it. I also had some who gave me first-class results on the job.

The Practical Discussion Department of the Southern Textile Bulletin is open to all readers whether they are interested in seeking information on technical questions or are willing to help "the other fellow" who has experienced trouble in some phase of his work.

The questions and answers are from practical men and have often proved extremely valuable in giving help when it was urgently needed.

The interchange of ideas between superintendents and overseers develops a great deal of worth while information that results in much practical benefit to the men who are concerned with similar problems.

You are invited to make free use of this department and to join in discussing various problems that are mentioned from week to week. Do not hesitate because you do not feel that you are an experienced writer. We will take care of that part of it.—Editor.

Now, the man for the job is the man who can and will run it and get everything out of it he can for the men who pay him for his time. I don't think because we have a brother overseer who happens to be a good friend of ours we should put him on a job and hold him and pay out our company's money to him if he doesn't run the job just because he happens to be a good friend to us. Now, if he can and will do his duty, then give him a job if you need a man, but don't hurt yourself trying to hold up a man when he is not competent and will not get results for you it would be better to hand him $10 and tell him you can't use him, than to hurt yourself trying to make a place for him, don't you think so now? I think the man for the job is the man who is a hustler. First, you have got to have practical training, you have to also have some education, you must be a good leader of help and also good manager. You must be a good thinker and know how to plan ahead. You must have a good system and see that it is kept up to your standard. You must be loyal yourself and give each hand a fair deal. You must be a fighter for production, low waste, and try and get all the first quality and just as low seconds as you can and to get this you have got to keep your eyes open at all times. Watch your machinery and have it in good shape and always teach safety first. This has been my training and I happen to be one of your brother overseers.

S. L. E. Texas.
West, Tex.

Best Method of Card Grinding.

Editor:

Is it best to grind cards heavily and in less time, or lightly and taking more time? W. O. W.

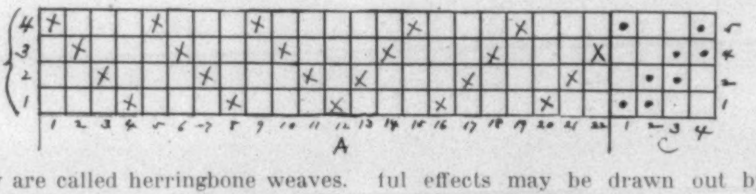
Herringbone Weaves.

Editor:

I am a weaver and interested in designing? Would it be asking too much to inquire through your periodical as to how herringbones are laid out on design paper? For example, what is meant by a 22 end herringbone weave? K. S. B.

A description of the herringbone weave and how to lay it out on design paper is given below:

A simple herringbone weave is derived from the common twill weave. Fancy herringbone weaves are derived from merely varying the twill weaves. A common arrangement of a herringbone weave is to have the pattern laid out in stripes or in parallel columns of even width. In one column the twill will run one way; and in the next column the twill will run in the opposite direction. This somewhat resembles or imitates a fish bone, and this is why they are called herringbone weaves. The total number of harnesses determines the length from the point where the wales or the twill meet to where they spread the farthest apart.



The total number of ends named in the weave determines the width of two columns which are thus paired in one complete herringbone pattern. To illustrate a 22 end herringbone weave will be composed of two columns or stripes of 11 ends each. The twill in one set of 11 ends will run up the cloth from left to right, while in the other column of 11 ends, the twill will run down from left to right, and begin up where the twill of the other column ends. In this case the plan as shown by figure one, shows that this 22 end twill is woven with 4 harnesses, two up and two down. Thus the wales or the raised parts of the pattern will have two warp ends down for the filling to pass over, and two warp ends up for the filling to pass under to form the valleys between the wales or diagonal ribs. The pattern will be completed with 4 picks, and the point will be on the 12th end. That is, the direction of the twill will be reversed on the 12th end.

Another thing worth noting is that there will be as many twill ribs or wales being formed or woven at one time, as there are ends down-in in one direction divided by the total harnesses used. For example: There are 22 ends in this twill to complete the pattern. There are 11 ends in each stripe or in each of the twin columns which complete the herringbone pattern. The point or direction of the twill changes on the 12th end. Now, if these 12 ends are divided by the number of harnesses —4 in this case—we have 3 for a quotient and which equals the number of diagonal wales or ribs in the herringbone which are being built and worked upon at each pick. While the length and the acuteness of the angle may be varied by the total number of harnesses used, the width of each pair of stripes in the pattern may be widened by increasing the number of ends to 30 or 38 ends or more. But in each case one-half of the ends must be drawn in through the harnesses in one direction front to back, and the other one-half in the opposite direction front to back. Thus the 30 end herringbone would have the turning point on the 16th end, and the 38 end herringbone would have the turning point on the 20th end. All of what has been said applies to plain herringbone weaves of the evenly balanced type. Many fanciful effects may be drawn out by studying designing.

The accompanying plan shows the layout for a 22 end herringbone weave which is made with 4 harnesses, the weaving particulars of which can be as follows: 2-32 reed, 41½ inches wide in the reed, 70 sley, picks per inch 84, 1 shuttle, warp yarn No. 27, filling yarn No. 19, 2 up and 2 down.

The finishing particulars would be 37½ inches wide, 68 ends per inch, 80 picks per inch, 3 12-100 yards per pound.

Mill Stocks Decline

Gastonia, N. C.—The largest decline recorded in any one week of the present year took place in the Southern textile share market for the week ending July 28, the present average bid price of 25 most active Southern cotton mill stocks standing at 106.68, a decline of $1.20 per share, according to figures released by R. S. Dickson & Co. The average for the previous week was 107.86.

The stocks of the Belmont group of mills which have led the North Carolina list this year from a standpoint of demand and rising prices eased off under the pressure of fairly liberal selling orders. The decline, however, was noticeable throughout the list of quoted stocks.

Says Rayon Threatens Wool and Silk

RAYON offers a real threat to silk and wool as a favored textile fiber; its recent approach to the desirability of silk, and its comparatively low and stable price, are factors which must be considered as affecting the future course of the textile industry, is the opinion of the National Bank of Commerce, New York, which makes the following survey in its publication.

"Any probability of rayon's cutting into the consumption of real silk was generally denied a few years ago. But now that rayon yarns are being made finer, softer and more elastic every day, the possibility deserves serious consideration. Silk has maintained its preeminent position in the textile world because of its natural superiority in certain respects over other fibers and has expanded its market into the fields of wool and cotton because of large crops marketed at declining prices. As rayon approaches silk in appearance and feel, price and supply assume greater importance in relation to the market for silk.

"In these particulars rayon as a manufactured product has two great advantages over silk. Production can be expanded or contracted in response to demand, and the price can usually be predicted several months ahead. Real silk, being an agricultural crop, is subject to weather hazards and is in produc-three to nine months before it is ready for the market. Projected output each year is determined by consumption in the season just past rather than by demand for the season ahead. Manufacturers of rayon, besides being free from disturbances by weather, are in close contact with their markets and can regulate operations accordingly.

Rayon vs. Cotton

"Rayon's future competition with wool and cotton is more problematical. Seasonal variations in styles may give rayon a comparative advantage intermittently but cotton has wearing qualities and covering capacity that rayon manufacturers are not trying to stimulate.

"Wool consumption has declined notably, 15 per cent in the last five years. This is due to the increasing favor for lighter-weight clothes. Rayon has gained some of this loss but it has been rather indirectly, for it is silk that has actually cut into fields hitherto taken up by wool. Two new processes are reported from Europe for the manufacture of wool-like fibers from cellulose but these are not advanced as substitutes for wool but as complements to wool in the manufacture of inexpensive materials. By their employment woolen goods which are now high priced compared with the other tetxiles may be enabled to compete on a more profitable basis.

"Rayon's silky qualities give it popular appeal. while its price makes it accessible to the volume market. Unlimited possibilities for increasing production prevent seasonal shortages which occur in the case of natural fibers. In view of a growing consumption of textiles as the world's population is becoming larger and the customs and dress of Europe and America are being adopted by other countries, rayon's particular advantages over the natural fibers, cotton, wool and silk, will assure its ever increasing importance in the textile industries.

Encroaches on Real Silk.

"Production and consumption of rayon have expanded on so large a scale in the last five years as to assure definitely the importance of its place among the textile fibers. Introduced as artificial silk, a substitute for real silk, rayon at first fell far short of active competition with the natural fiber, and for many years after its advent the new textile made comparatively slow progress. But improved yarns and a better understanding of its characteristics have steadily enlarged its field.

"Cotton, wool, and linen manufacturers have found that it can be used to give a new decorative appeal to their products. More recently it has proved of similar use to silk manufacturers, and it now begins to encroach on the province of natural silk. Today it is established in the apparel, furniture and decorative fields with its limits still undefined.

"Several years ago considerable dissatisfaction developed among manufacturers and consumers or rayon goods because of its low tensile strength and peculiar affinity for dyes. Largely because of the chemical composition rayon yarns and fabrics will not take the same dyes as silk, cotton or wool. This situation led to numerous complaints. Rayons were heavy, extremely lustrous an dlacking in elasticity. Popularly known as artificial silk, the new fiber was discredited because it would not stand up under the treatment accorded silk or cotton.

Technical Progress.

"Experiments with the manufacturing and dyeing processes have brought about great improvement in the last several years which have made possible effects unattainable before. Further chemical treatment has helped a great deal in subduing the high sheen, and in the case of one cuprammonium yarn tighter twisting of the filaments has done much to produce the desired effect. Efforts to improve elasticity and tensile strength of the yarns have not been so satisfactory but progress has been made and the future should bring even better results.

"Encouraged by the greater success of improved products, rayon manufacturers everywhere are striving to bring their yarns to perfection and are continuing the expansion of plant capacity at a high rate. Already a number of new companies have been formed in this country and in Europe, while established companies are almost universally adding new units to old plants and organizing new foreign branches.

"Such rapid and extensive expan-

(Continued on Page 26)

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You can readily figure running-time from the records of Veeder-Root Pick Counters. A loom that should make 130 picks per minute may show but 32½ per minute—and show it is going but 25% of the running time. Then it's time your overseer stepped in, and stepped-up the pace of the weaver.

Use Veeder-Root "watch-dogs of the weave room" to detect looms that steal time, operatives that waste time; looms fixers that lose time for both.

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Textile Research Work at North Carolina State College *

By Thomas Nelson, Dean of the Textile School.

RESEARCH is a comprehensive subject and is of much importance to the textile industry today. The dictionary gives several definitions of research such as "To search again and anew" or, in other words, a re-search; "diligent and protracted investigation," "studious and laborious inquiry" and other definitions. Large manufacturing companies such as the General Electric Company, the Bell Telephone Company and others, have found that research conducted in their industrial laboratories has contributed to the improvement of their product and has been, I believe, financially a success. Many illustrations can be given of the value of a research laboratory as it effects a particular business. In many cases the results obtained through application and concentration of thought not only benefits an industry but is also a direct public beneficiary.

Textile Research.

Every branch of industry have scientific problems to solve. This is particularly true of the textile industry. Yet this industry has a background of scientific history that is creditable. True, research has not developed in this industry as much as in some others, but think for a moment what has been done.

Beginning with ginning and the development of the gin by Whitney; hand spinning and the development of spinning; hand weaving and the development of the loom; also the development and improvements over the old methods of dyeing and finishing. With each increase in production because of development of machinery, improved methods have been required to keep pace with production, so that the old adage is still true that "necessity is the mother of invention" and I would add also of "Research."

Rayon, one of the wonders of the age, unknown a comparatively few years ago, has developed into a world wide industry and is a field for further scientific investigaiton.

I believe I am safe in saying that textile progress during the past 25 years is the direct result of research, but what is there ahead of us. With all that has been done, there is still a tremendous amount of work yet to be accomplished. There are unsolved problems on every hand, occurring again and again, which require fundamental research.

Take for example, a cotton boll which is the foundation of the largest industry of the South. A cotton boll consists of thousands of individual fibres; in every case of different lengths of fibres, and very often of different maturity in the same boll. Yet this cotton is taken from the boll and put through a series of machines—scientific processes—and made into yarns and fabrics. All of which is the result of research and experimentation, but there are still many unsolved problems in connection with the manipulation of cotton. For example: What affect does "drag" in cotton have on the strength of yarn; what relation has spirality of cotton to breaking strength of yarn; how much does maturity of fibre, or the development of the cell wall, affect the strength of the fibre and later the yarn; and the numerous problems connected with the affinity of dyes as they affect cotton and yarn; and others too numerous to mention, to say nothing of the larger problems of the textile industry.

But I have digressed somewhat, as I was not asked to discuss the need of research in the textile industry but to tell you something of the work being done at the Textile school of the North Carolina State College and of the aims of that institution.

The Textile School has an excellent equipment of machinery for the instruction of young men in the art and science of cotton manufacturing, which includes textile chemistry, bleaching, dyeing and rayon. The school also has silk throwing and knitting equipment.

In addition to this equipment, which is used primarily for instruction purposes, the college has provided a complete experimental cotton mill with regular commercial machinery of the latest type which will permit a wide range of operations. This room is equipped with the latest automatically controlled humidifiers so that humidity can be controlled and tests conducted under comparable mill conditions. I might say that this is the only textile school in the country, so far as I know, to have such an experimental laboratory. This and other laboratories in the Textile School are placed at the disposal of any mill or individual who desires to use them for the purpose of research and experimentation.

During the present school year an additional research laboratory was established and equipped for the study of rayon, starches, sizes, dyes and also for photo-micrography. The equipment in this room has been selected with a view to the needs of research in this particular line of work and is as follows:

Equipment in Laboratory for Research and Experimentation.

LaMotte Roulette Comparator for determining pH values;

Bausch and Lomb Photomicrographic outfit;

Microtome for obtaining cross sections;

Microscope accessories such as Silverman Illuminator; Abbe Camera Lucids; Student Ocular, Lamps, etc.;

Kennicut Hurley Colorimeter;

Kjeldahl Outfit for determining in Nitrogen;

Electric Oven;

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*Address before Piedmont Section, American Association of Textile Chemists and Colorists.

Electric Stirring and Shaking Apparatus;
Orsat Gas Apparatus for testing flue gases;
Cleveland Open Cup Oil Tester for flash and fire points of oils;
Alexander Glue Tester for Viscosity tests;
Scott's Viscosimeter for oils, etc.;
Westphal Balances to determine specific gravity;
Analytical Balances;
Babcock Separator;
Glass Ware and Supplies;
Water Baths; Hot Plates, etc.

For a study of fibres, yarns and fabrics and to make tests on these materials another laboratory has been established at the school.

The equipment consists of the latest machines used for this purpose and is as follows:

Equipment in Research Laboratory for Yarns and Fabrics.

Suter Cotton Stapler;
Roving Reel;
Cotton Yarn Reel;
Silk Yarn Reel;
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Quadrant Yarn Balance;
Yarn Inspector;
Twist Counters;
Single Thread Tester;
Micrometer;
Power Yarn Breaking Machine with Autographic Recorder;
Power Cloth Breaking Machine with Autographic Recorder;
Crimp Tester;
Mullen Tester;
Emerson Conditioning Oven;
Portable Humidifier.

Co-operation With the Industry.

During the past year the Textile School has been called upon to assist mills in solving some of these problems. Many tests have also been made for mills, a list of these tests being given below.

Work done for mills at the North Carolina State College Textile School since September 1, 1927:

1. Comparison of strength and quality of different samples of knit goods—yarns made by yarn mill and made into men's knitted underwear.
2. Comparison of dye on yarn.
3. Analysis of imported sheeting.
4. Analysis of Indigo paste to find per cent of Indigotine.
5. Allowable percentage variation in indigo paste.
6. Chalk marks on cotton, to determine whether or not these can be removed in bleaching.
7. Test on alcohol dye solution to determine volume fo alcohol in solution.
8. Test to determine presence of injurious ingredients in slasher preparations on yarn.
9. Viscosity tests on starch.
10. Test to determine variation in counts of yarn.
11. To determine class of dye in hosiery.
12. Breaking strength of chambray used for men's shirts.
13. To determine reason for formation of scum in dyeing liquor.
14. Testing gingham fabrics for breaking strength.
15. To determine removability of chalk stains on cotton skeins previously treated with and without spray method of preparation.
16. To ascertain breaking strength, size, evenness, and elasticity on nine samples of yarn.
17. To determine cause of cloudyness in black dyed cloth.
18. To obtain construction, breaking strength and elasticity on cloth used for special purpose.
19. To try to remove black marts by practical mill method and determine cause of streaks in knit goods made from yarn submitted.
20. To determine presence of cotton in linen goods.
21. Spinning tests on Mexican big boll and Acala cottons.
22. Breaking tests on 22 samples of mercerized yarn ranging from 16-2 to 100-2.
23. Grading and stapling cotton samples.
24. To determine breaking strength of bunting fabrics.
25. To determine purity of paraffin.
26. To secure proper chemicals to dissolve the scale formed, by use of peroxide, on bronze pipe.
27. To identify materials used in obtaining special finish on special cloth.
28. Stripping color from cotton.
29. Analysis of sizing tallow.
30. To determine breaking strength of fabric for export.

It is the desire of the Textile School to render assistance to the textile industry and to co-operate in helping solve their problems, both by research and testing.

Fellowships.

It is a pleasure to tell you that the president and trustees of State College recognize the value of research to the textile industry: Two fellowships have been awarded by them to the Textile School for the next school year which will enable the school to undertake more research and investigational work.

We are looking forward confidently to such associations as yours for co-operation in this work and we will be glad to have suggestions from any of your members at any time.

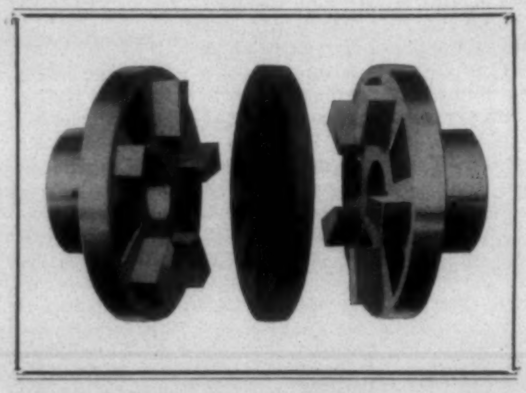
Again let me call your attention to the fact that the laboratories at the Textile School of North Carolina State College are at your disposal, to be used by you or others engaged in the textile industry at any time.

It is our earnest desire that full advantage be taken of this and that we, the faculty of the Textile School, may have the privilege and pleasure velopment of the textile industry. velopment of the tevtile industry.

H. R. Fitzgerald, president of the Riverside and Dan River Cotton Mills, Danville, Va., and president of the American Cotton Manufacturers' Association, was a visitor in the New York marktes this week.

Claiburne M. Carr, who for some years has been president of the Durham Hosiery Mills, but who is now to represent the company in New York as vice-president in charge of sales, has assumed his new duties in New York.

WOOD'S flexible couplings



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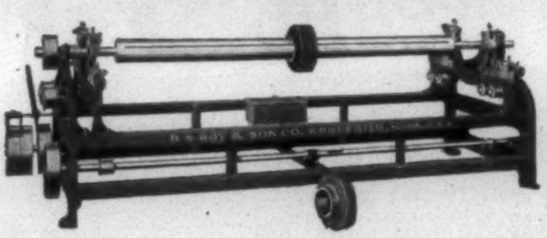

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ROY GRINDERS *are Standard Equipment in Textile Mills Everywhere*

Cotton Carry-Over Is 2,500,000 Bales

Washington, July 29.—A carryover of American cotton in mills and warehouses of the United States of 2,500,000 bales roughly may be estimated as existing at the close of the present cotton year, July 31.

In view of the discussions that annually occur over predictions and estimates of cotton carryover, both private and official, it is here explained that these figures are made up of the latest Government estimates for such portion of the present year for which they have been gathered, adjustments being made to cover the remaining portion of the twelve months.

The carryover figure of the Department of Commerce as of August 1, 1927, was 3,762,367. To this now must be added the ginning record for the year of 12,777,505 bales. Thus the available supply of cotton for the year now ending was 16,539,872 bales. Exports to July 27 totalled 7,754,039 bales, of which, however, about 183,000 bales were of linters, and these deducted showed foreign takings to be 7,571,039. Exports during the latter days of the month generally are rather heavy and it is predicted that the twelve months' total will run to about 7,545,000 bales. Deducted from the visible supply roughly 8,894,870 bales remained for domestic consumption and carryover.

Imports 325,000 Bales.

Eleven months' consumption, as reported by the Government, was of 6,393,946 bales, to which it is thought will be added about 455,000 bales, as representing July consumption, so that roughly the total might be 6,850,000 bales. Then as much as 2,050,000 bales might be said to have been left over at the end of the present month.

The computations above are all as of running bales. It is believed that our total imports of raw cotton for the year ending July 31, will run in the neighborhood of 325,000 bales of about 500 each. In view of the difference between running and import bales it is not possible without a means of converting the one into the other to make a definite computation. However, on the basis of the figures obtainable and the adjustments made to cover additional periods of time making up the full cotton year, it would appear that, with the city crop, so-called, added, requiring an arbitrary adjustment of, say, 125,000 bales, the carryover will be in the neighborhood of 2,500,000.

Official figures of both the United States and the estimated world carryover of American cotton will be awaited with great interest. A report recently received by the Foreign Service of the Bureau of Agricultural Economics from a representative in the Orient showed that stocks of cotton in Japan were particularly low, since the spinners there were not loading up on cotton at present prices. In Great Britain efforts are being made to bring about an agreement among the spinners of American cotton to curtail production.

Foreign takings fell off materially, as may be seen from the comparison of about 7,600,000 bales to July 28 this year with 10,900,000 for the same period last year. That does not mean that consumption abroad has decreased for the European mills have been reasonably busy. These mills had accumulated large stocks of cotton a year ago at prices running from 12 cents to 15 cents per pound and thus were able to decrease their takings this year when, as last week, the price was better than 20 cents.

Should the estimate for the carryover of cotton in the United States that soon will be given out by the Government be in the neighborhood of the figure here suggested, it is believed probable that there will be no great complaint from the overzealous members of Congress who are always on the lookout for opportunities to "bull the market." During the recent investigation of the cotton trade by the Senate committee under the chairmanship of Senator Smith, of South Carolina, the Bureau of Agricultural Economics and the Census Bureau both were sternly criticized by the cotton States' legislators because of the size of the carryover they estimated. They preferred to take the estimate of Henry G. Hester of the New Orleans Cotton Exchange. The chief controversy waged around the carryover for the world with respect to which the Census Bureau estimated 669,000 bales and the Bureau of Agricultural Economics 866,000 bales more than did Hester as of July 31 last.

It was declared by the Southern legislators on several occasions recently that efforts would be made at the next or the succeeding session of Congress to secure legislation that would guarantee greater accuracy in the compilation of world holdings of American cotton. This determination was arrived at too late during the last session of Congress to permit of any action.

Link-Belt Co. Catalog and Engineering Data Book

If the amount of usable information put into a general catalog is any criterion of its work, then the Link-Belt General Catalog 500, published by Link-Belt Company, of Chicago, Indianapolis and Philadelphia, is a good example of what an informative general catalog should be.

It consists of 1088 pages and not only covers in engineering data and list prices, the complete chain, sprocket, power transmission, elevating and conveying and engineering divisions of the company's business, but contains considerable other data for which the engineer has use.

In developing this book, it was evidently their purpose not only to make its contents of engineering information so ample that engineers might design plants of a standard character without their aid, but also to supply price lists so complete as to enable the experienced buyer to determine net prices of his purchases.

The book is admirably arranged to serve these purposes. In addition to being an unusual engineering catalog, it is a text book of the conveying, elevating and chain transmission art.

Celanese on the Stage

The use of Celanese brand fabrics for costumes of stars and chorus as well as for draperies, curtains and furnishings of Earl Carroll's magnificent new production of "The Vanities" was revealed when the show opened in Atlantic City July 30. Celanese voiles, moires, taffetas, satins and velvets are used lavishly throughout the entire staging of the production.

Mr. Carroll's selection of these increasingly popular fabrics is of particular interest to the textile industry in view of the unusually exacting requirements which governed his choice.

In competitive examination with other eligible fabrics, it was found that Celanese not only offered the great beauty of appearance, lending itself with unusual readiness to artistic draping by the stage decorator as well as to the actual customer, but that the wearing qualities of these fabrics made eminently suited to the showman's rigorous demands.

By reason of the fact that Celanese fabrics are absolutely unimpaired by washing—even the watering of the moires being applied with complete permanency—it is expected that replacement costs during the probable long run of the show will reach an unprecedented minimum.

Another important element in Mr. Carroll's selection of Celanese is said to be the adaptability of all these fabrics to dyes of unusually delicate shades, as many of those used in "The Vanities" had to be especially colored to meet Mr. Carroll's requirements.

The Atlantic City opening was attended by an extensive retail display of Celanese fabrics staged both at Blatt's Boardwalk Shop in the Traymore and in the Blatt department store proper.

Fine Goods Sales Exceed Production

An improving tone in the fine and fancy goods market noticeable for the last few weeks is a subject of comment in the weekly report of one large commission house. Of the past week's business, the house says "sales were larger than for the previous week, though still somewhat below full production. Last week's sales in the fine and fancy goods department were in excess of full production, and this week's sales more than twice full production. The effect of the New Bedford strike is at last beginning to make itself felt. In sheets and pillow cases, we have had the best week since January, 1927, sales being several times full production. Prices of sheets and pillow cases have been advanced, and this division shows distinct signs of improvement.

"Since the first of July, the market has entered into a fresh stage of its development. Working on low-priced cotton for the year ending last October, the mills turned out and disposed of an immense production—the largest on record. Many of us did not realize how much of a price proposition this immense turnover really was. At any rate, with cotton 10 cents to 12 cents per pound higher, the mills continued to grind out goods during the last quarter of 1927 at the same rate as before, even though it had already become clear that this production was no longer moving freely. Many realized the necessity of curtailment long ago, but the attempt made in December to regulate matters was more theoretical than practical and very little was accomplished by it.

"With the continuation of high production and inability to dispose of it freely, the margin between cotton and cloth narrowed steadily month after month, until finally, by June, it had approached a point where clearly something had to happen. The result was the shutdown, practically countrywide, for the first week in July, followed by the decision to shut down in a similar way the first week in August, and the determination to do so again in September if it should be necessary. The fact that constructive action has finally been taken, has furnished the much needed support to the market.

"Prices have been maintained during the last four weeks in the face of a weakening cotton market and comparatively light demand. For the first time in six months there has been some real improvement in mill margins and the fact that sellers have seen the 'handwriting on the wall' leads us to believe that we have entered a period of greater intelligence regarding both production and sales. In the long run, goods have got to be sold on the basis of cotton; they certainly cannot be sold for a long run on a basis far below the actual price of cotton.

"We believe that the clouds have begun to pass away, though we realize that much thought and care has still got to be given to the situation before the skies are clear again.

"F. W. Tattersall, the Manchester, England, cotton and cloth authority, who is often inclined to be pessimistic, writes as follows:

"'Since the beginning of this month the Manchester market has been decidedly flat, and there are no signs at the moment of any change in the attitude of buyers. It remains to be seen whether the present policy of holding aloof will turn out to be correct, but yarn and cloth merchants seem determined to act with extreme caution.

"'There is ground for believing that some cloth dealers in outlets abroad are going short, and the very small shipments to Calcutta during the last two months are an indication of the trend of events. Customers, however, have had matters all their own way for so long they believe that goods can be obtained as wanted on their own terms. The time may come, however, when short interests will have to be covered, but there is not much likelihood of any real trade revival until the autumn when more settled views will prevail with regard to prices.

"'In the meantime, the situation throughout Lancashire is deplorable.'"

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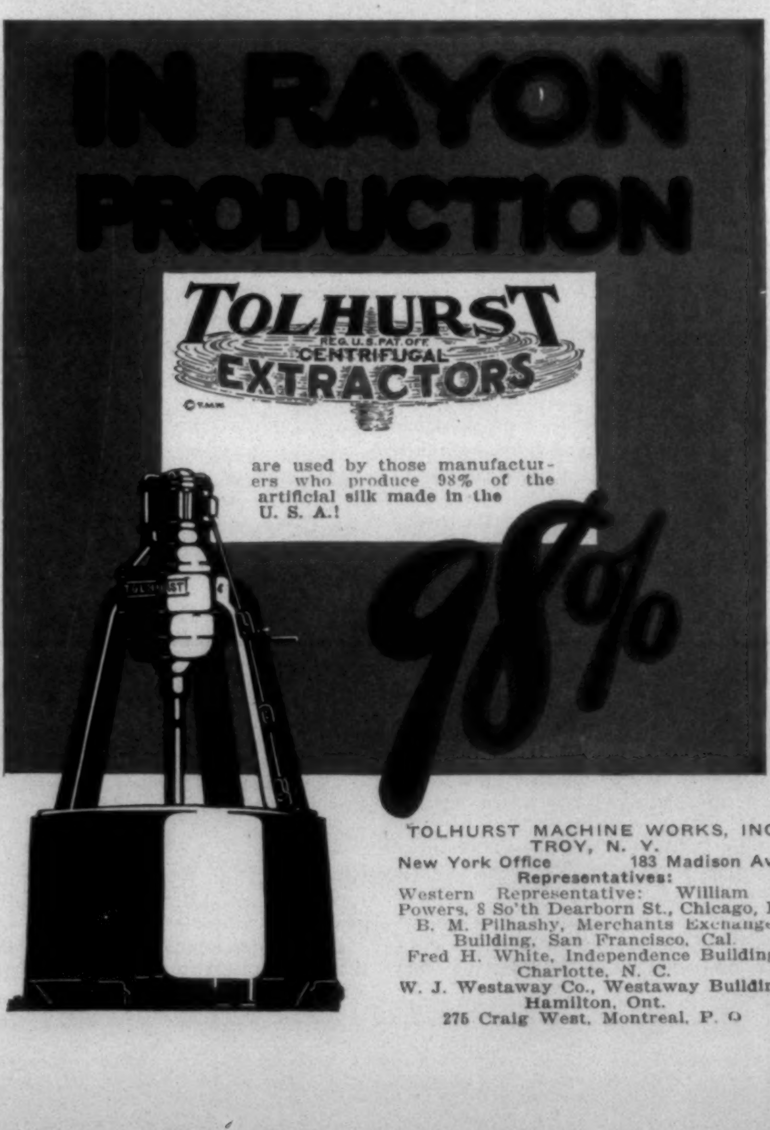

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Published Every Thursday By
CLARK PUBLISHING COMPANY
Offices: 18 West Fourth Street, Charlotte, N. C.

THURSDAY, AUGUST 30, 1928

DAVID CLARK — *Managing Editor*
D. H. HILL, JR. — *Associate Editor*
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Caution Urged

WE notice the following statement in a Spartanburg paper:

> Several weavers from New England cotton mills, out of work because of shut downs in that section or fearing the cutting of the number of employees, have applied to the local Salvation Army post recently for assistance in finding places in Spartanburg mills. The weavers have been placed easily, it is said.

We do not wish to prevent the employment of any person who sincerely desires work but we do think that caution should be used in employing mill operatives from New England.

A plan of planting union members throughout the cotton mills of the South for the purpose of fermenting labor troubles was openly announced last year by the textile union leaders of New England and we know of two Southern mills that, after employing New England operatives, discovered that they were spending a large part of their time praising unions and union activities.

There is no doubt that by planting a number of loyal union members throughout Southern mills the seeds for future troubles could be laid.

There are plenty of loyal and efficient mill operatives of the South who desire and need employment at this time and there is no good reason to employ any from New England.

The New England mill operatives can find employment in other lines and we can see no reason to be so charitable that we risk admitting them to our mills.

We feel sorry for the New England operative who can not secure employment in mills of that section, but by following and aiding Thomas Failure McMahon and the other parasites who pose as union leaders, they have caused strike after strike and have aided in wrecking the cotton manufacturing industry of that section.

A Lost Opportunity

AT Olympia Fields, Chicago, on June 23rd, we watched Bobby Jones finish his final round in the National Open Golf Tournament for a tie with Johnny Farrell, and then went back to the seventeenth tee to see Walter Hagen finish his round.

When seated there we heard that a Mr. Hancock had a chance to win the tournament and when he came up we were surprised to see that it was young Roland Hancock, of Wilmington, N. C., whom we knew.

We were told that he only needed to make a 5 on each of the remaining two holes to win the National Open Golf Championship, which usually means $50,000 in exhibition fees during the year of the championship.

Bobby Jones and several others had made 3's and 4's on the last two holes and all that Rowland Hancock had to do was to make two 5's in order to not only win the greatest honor in golf but profit, at least, $50,000 thereby, but that is exactly what he did not do, as he made two 6's and ended one stroke behind Bobby Jones and Johnny Farrell.

As he drew back for his drive on No. 17 his wrist turned just a little too much and his ball, instead of going down the fairway, went into the woods to the right and his chance, probably the only time it will come to him in his life, was lost.

Hancock was young and not used to playing before the multitude that gathered to see him win and his nervousness cost him his chance.

The case of Roland Hancock is the case of many men in the business world.

An opportunity of a life-time stands for one fleeting moment before a man and when he fails to grasp it, vanishes forever.

Sometimes success is due to blind luck in accepting an opportunity without recognizing its value.

The Stockingless Style

A number of keen-eyed gentlemen who have been observing things and legs in particular report that many of the girls who used to "roll their own" are now wearing no stockings at all.

It is unnecessary to add that this barelegged vogue is not causing any joy among the hosiery manufacturers.

It seems that in many of the larger cities, a great many women are going about the streets without stockings. And others, who have not reached the point of venturing out without them, are finding out that they can cut down their hosiery bill by leaving off their stockings at home.

The fad seems to have started in Paris and any style that starts in Paris is usually loaded with dynamite that is powerful enough to spread it to the corners of the earth.

A few years ago, any man who predicted that American women would be going about the streets without stockings would have been laughed at. Anyone who has witnessed the change that has come about in women's clothes in recent years now knows that it isn't safe to predict anything where styles are concerned. We all know that when women start in to shed clothes, they do a good job of it. Witness the disappearance of long skirts and petticoats.

The short skirt put the hosiery makers on the map. Now the hoseless style is threatening to run them off again. In Paris, they say, the whole thing has simmered down to a war between the hosiery mills and the beauty parlors. The latter are on the offensive. They have started a stockingless campaign themselves, providing a delicate beiege tint for limbs where powder and rouge does not quite do the trcik.

The women are already credited with having dealt the textile industry a hard blow when they adopted present day styles. Should the stockingless fad really reach large proportions, it will not hurt the hosiery men alone. There are the machinery makers, the silk cotton and rayon yarn makers, the dyestuff men, wholesalers, retailers and so on down the line. It will cost them all a good deal of money if the women leave them with an empty stocking to hold.

The whole thing is really a question of style. Whatever women wear, or don't wear, is a matter of style alone. The hosiery trade had best bestir itself to see that its own styles are not swamped by the propaganda of the beauty parlors.

Where Stocks Are Necessary

WE pointed out last week that excess of cotton goods stocks over unfilled orders was 156,000,000,000, which is slightly more than half a month's production based upon the reduced production during June and slightly less than half a month's normal production.

We stated then that while it was desirable to further reduce the stock of goods on hand, that stocks represented 15 days' production in excess of orders did not disclose as weak a situation as was generally supposed.

Since writing the editorial referred to, we have received a letter from one of the leading mill men in North Carolina who brings up another phase of the stock situation which is well worth consideration.

He points out that the reports of stock on hand are very misleading because all pattern goods mills are forced to carry large stocks at all times, in order to make shipments under present buying methods and demands for great numbers of patterns.

"I have carefully figured out," he writes, "that in our plant of only 600 looms making patterns now required and due to hand to mouth buying, we cannot get along with less than 800,000 yards of stocks on hand at any time. That is stock, of course, but it is just as necessary as the bricks in the walls or the looms in the mill."

This is an instance where a certain amount of stock is necessary, and it seems that such stocks should be allowed for in computing figures on stocks and unfilled orders.

Wrong Location

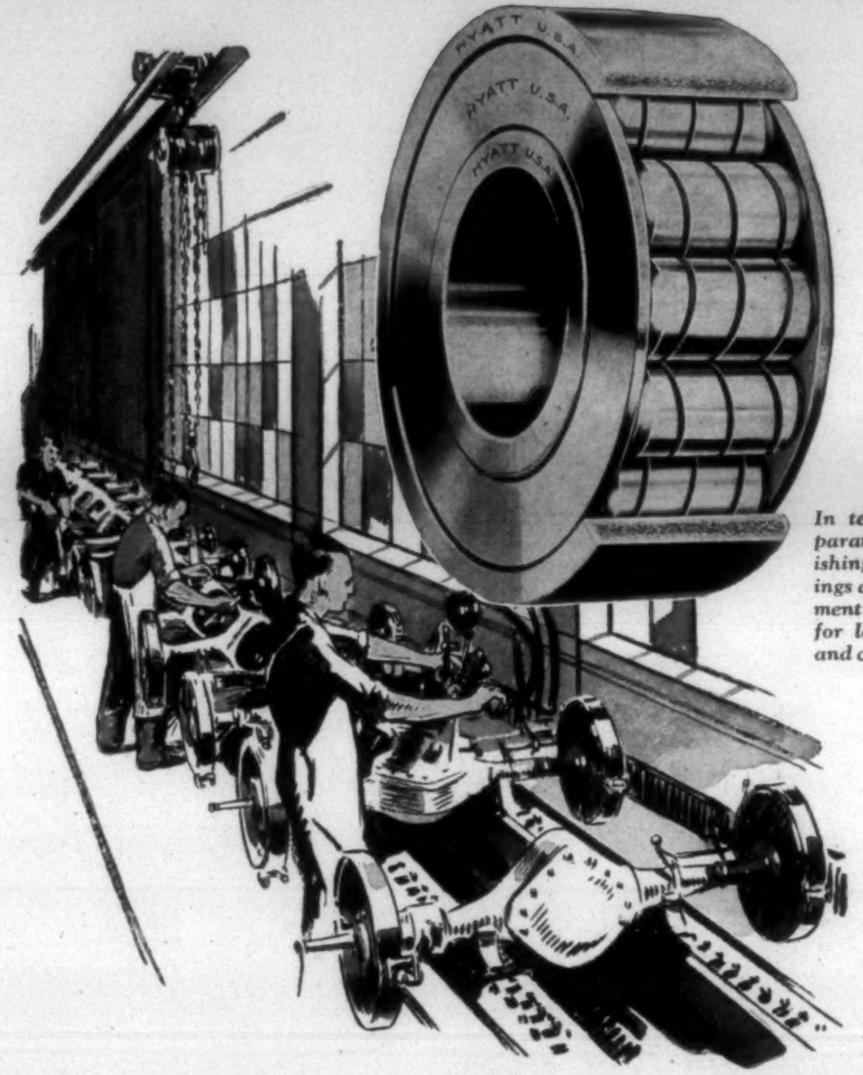
WE notice the following in the Daily News Record of New York, and without any desire to enter the field of politics, must admit that it was not a very appropriate location for a prosperity banner:

> The big Hoover banner, which swings across Worth street at the west side of Broadway, has attracted a great deal of attention. There were a great many, including prominent Republicans, who questioned the advisability of featuring, on said banner at the corner of Worth street and Broadway, "Continuing Coolidge Prosperity." Many suggested that this banner would be more in place downtown in the Wall Street district; but that it was somewhat ironical to swing it at the entrance to the textile district.

Not An Essay Contest

SECRETARY J. M. GREGG, of the Southern Textile Association, who is receiving applications for the Hart Scholarship Fund, states that many of the applicants are under the impression that the scholarship is to be decided solely upon the merits of the essay that each applicant is required to submit. He wishes to make it clear that this impression is entirely erroneous. The award of the scholarship fund is in no way to be confused with an essay contest. Each applicant is required to submit an essay upon the historical development of the textile industry. This essay, however, is to serve only as a guide in aiding the committee to determine something of the knowledge and ability of each applicant.

The boys or girls who are to receive the help of the scholarship fund will receive it purely upon a basis of merit. They must be worthy of aid and in real need of financial assistance to continue their education.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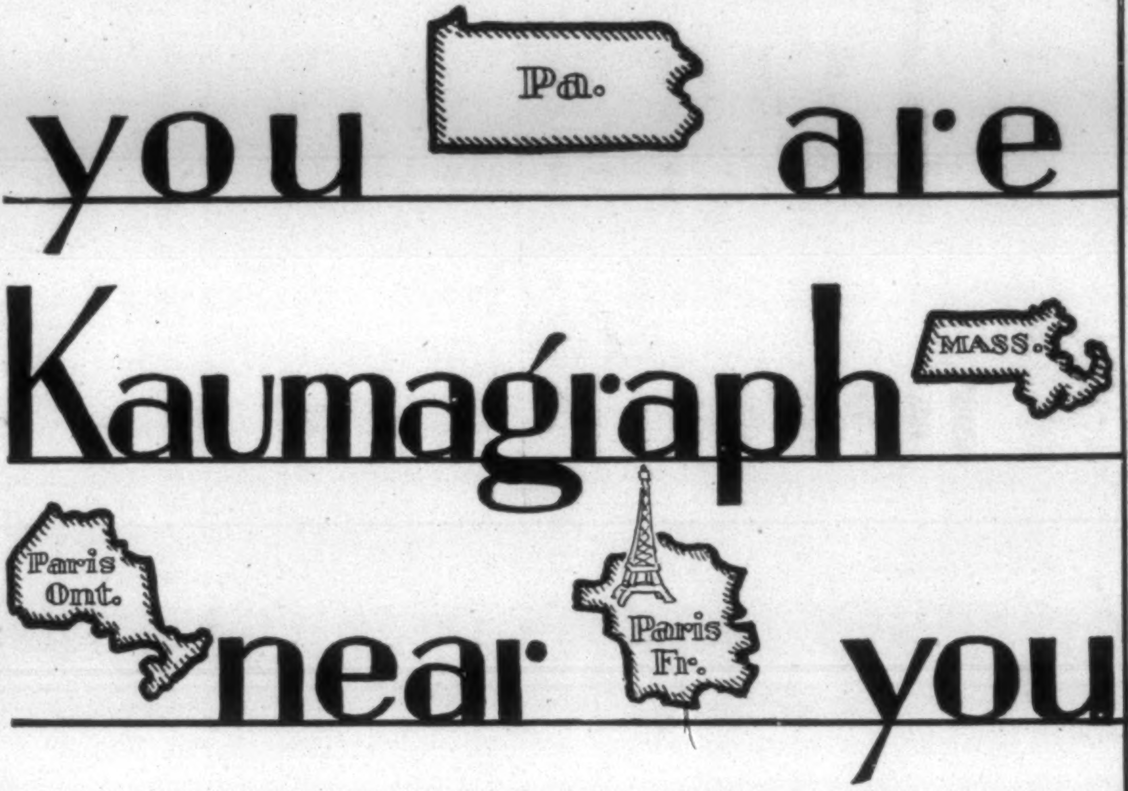
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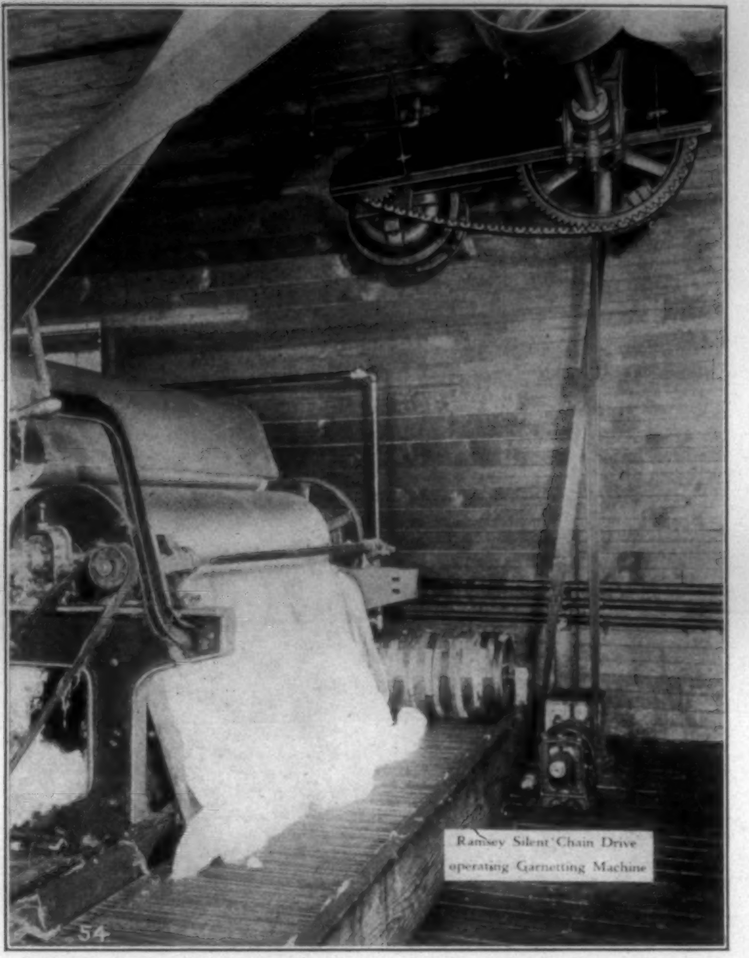

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Kansas City, Mo.—Morse Engineering Co.
Los Angeles, Cal.—F. C. Millard Engineering Company.
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New York—Ramsey Chain Company.
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Utica, N. Y.—Langdon & **Hughes Construction** Company.
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Personal News

J. W. Teal has resigned as overseer carding at the Burlington Mills, Inc., Burlington, N. C.

F. M. Williams is now assistant designer at the Burlington Mills, Inc., Burlington, N. C.

N. B. Odell has resigned as overseer cloth room at the Alamance Novelty Mills, Burlington, N. C.

H. C. Hardee, formerly with the El Paso Cotton Mills, El Paso, Texas, has been appointed superintendent of the Texas Gauze Mills, New Braunfels, Texas.

W. W. Hinson, of Monroe, N. C., has accepted the position of overseer of No. 1 carding at the Rhodhiss Mills, Rhodhiss, N. C.

Albert Middlebrooks, of Porterdale, Ga., has become night overseer of carding at the Morgan Mills, Millen, Ga.

J. W. Kimberly has been promoted from overseer No. 1 carding to overseer No. 2 carding at the Profile Cotton Mills, Jacksonville, Ala.

R. H. Hammett has been promoted from second hand to overseer No. 1 carding at the Profile Cotton Mills, Jacksonville, Ala.

W. W. Smith, from Kinston, N. C., has become overseer carding at the Burlington Cotton Mills, Inc., Burlington, N. C.

C. B. Wall, overseer carding at the Social Circle Cotton Mills, Social Circle, Ga., has taken charge of the spinning also.

B. E. Dickson has been promoted from designer to superintendent of the Stevens Manufacturing Company, Burlington, N. C.

Julius Kates, from the E. M. Holt Plaid Mills, Burlington, N. C., has become overseer cloth room at the Alamance Novelty Mills, of the same place.

W. J. Lockridge has resigned as overseer of No. 1 carding at the Rhodhiss Mills, Rhodhiss, N. C., and accepted a similar position at the Cliffside Mills, Cliffside, N. C.

J. E. Mack, of Elberton, Ga., has been appointed overseer of weaving at the Winfield plant of the Alabama Mills Company, Winfield, Ala., which is expected to begin operations in September.

W. A. Eastridge, from the Manville-Jenckes Mills, Gastonia, N. C., will be overseer of carding and spinning at the Winfield plant of the Alabama Mills Company, Winfield, Ala.

Winners of H. A. Metz Textile Awards Announced

Each year the students of Textile High School, New York, most proficient in certain phases of work intimately connected with the science of textile production are awarded prizes donated by the Hon. Herman A. Metz.

Following this custom, the Metz awards for 1928 were received by William Rothman, first, and Richard Glassman, second, in chemistry and dyeing. The first prize in batik and dyeing was won by Edward Faunig; second prize, by Beatrice Shutard.

William K. Holt.

Burlington, N. C.—William K. Holt, prominent cotton manufacturer, banker and merchant, died suddenly at his home here. He was 62 years old. Mr. Holt was president of the McEwen Knitting Company, president of the Holt Bros. Knitting Company, and a director in several other mills, two banks and a number of other business concerns. He is survived by his wife and 12 children.

Spindle Activity in June

Washington.—According to prelimliminary census figures, made public here, 35,749,944 cotton spinning spindles were in place in the United States on June 30, of which 28,624,483 were operated at some time during the month, compared with 29,060,360 for May, and 32,756,862 for June, 1927.

The aggregate number of active spindle hours reported for the month was 7,247,726,545. During June the normal time of operation was 26 days, compared with 26½ for May, 24 2-3 for April, 27 for March, 24 2-3 for February, and 25½ for January. Based on an activity of 8.83 hours per day, the average number of spindles operated in June was 31,569,503, or at 88.3 per cent capacity on a single shift basis. This percentage compares with 95.0 for May, 94.8 for April, 96.8 for March, 101.2 for February, 101.5 for January and 109.3 for June, 1927. The average number of active spindle hours per spindle in place for the month was 203.

Sumatra Silk Production May Be Started by Japan

Washington, D. C.—Investigations with a view to determining the possibility of producting silk in Sumatra, especially in the northern half of the island, are being conducted by Japanese experts according to a report received by the Department of Commerce from the American Consul at Medan. Favorable experiments have been made with silk worms in the Benkoelen district on the western coast of southern Sumatra in the hill districts of the east coast, and the higher sections of Atjeh.

Reports submitted by the investigators show that climatic and soil conditions in Suatra are considered excellent for the growing of silk worms.

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Amalie RAYOLENE

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DISCRIMINATING knitters of rayon depend largely on one of the several types of RAYOLENE to keep their production up to the highest possible standard of quality.

Recognized as the foremost independent refiners of 100% pure Pennsylvania colorless, odorless and stainless mineral oils—the base of our RAYOLENE—users are assured of the last word as to purity of the mineral oil content.

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MILL NEWS ITEMS OF INTEREST

Guntersville, Ala.—Saratoga Victory Mills have let contract for new mill here. See under Guntersville.

Athens, Ga.—The Southern Manufacturing Company is installing 14 new Whitin cards and 60 new Draper looms. The company expects to add additional cards and looms later.

Royston, Ga.—The Royston Manufacturing Company, recently organized here by J. M. Battson, president of the Lavonia Mills, Lavonia, Ga., and associates, will erect a mill building 74x400 feet and install 6,142 spindles on medium count yarns.

Anderson, S. C.—E. L. Bowen, in charge of installing the 30,000 additional spindles shipped to the Anderson plant of the Appleton Manufacturing Company from the Lowell, Mass., plant, reports the work to be progressing steadily and that present indications are that these additional spindles will be running by the latter part of the fall.

Spartanburg, S. C.—The addition to the Powell Knitting Mills, near the limits of this city, is progressing. Ralph Powell, president of the local plant, announces that it will be completed by October 1. This addition is 132 by 108 feet, three stories, giving additional floor space of 400,000 square feet. There is also a dyeing room, 50 by 50 feet. The first floor of the addition is to be used as a yarn storage room. On the second floor will be located the winding and finishing departments, while the third floor will be given over to the knitting machines. There are at present 175 of these machines. This number will be increased to 450 from the Philadelphia plant. The addition will greatly increase the payroll. As compared with 180 employees, the plant will on the installation of its entire machinery equipment, employ from 350 to 375 persons, according to Mr. Powell.

Burlington, N. C.—Masons recently began laying brick on the $1,000,000 addition to the May Hosiery Mills Company's large plant here, corner of South Main and Morehead streets. The work is in charge of Sharpe & Bryan, local contractors, who took charge as soon as the survey of the lot was made, and the work of completing the foundation finished last week. Brick and other matreial for the structure have been placed on the lot in order that there may be no delay in pushing the building to rapid completion.

The new building will be used for the manufacture of silk full-fashioned hosiery, and the initial installment of machines will be two dozen, or more. Knitters to handle this type of machinery will be trained as rapidly as the machines can be installed, and when complete there will be 75 to 100 machines in the new building.

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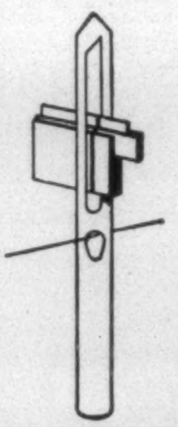

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WARP STOP MOTIONS—NOW
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Supervision of Landscape and Engineering Construction
Largest Landscape Organization in the South

McMinnville, Tenn.—The Welwood Silk Mills, 2 Park avenue, New York, have leased a building here and will install a 20,000-spindle silk throwing plant. The output will be used to supply a number of silk weaving mills operated by the company in Pennsylvania and New York.

Albertville, Ala.—Contract for the erection of the new mill to be built here and at Guntersville, Ala., by the Saratoga Victory Mills has been let to Smith & Williams, Atlanta. Each of the mills will have 15,000 spindles and 600 looms and the villages will have 50 homes each. Robert & Co., Atlanta, are the engineers.

Dyersburg, Tenn.—Ladd J. Lewis, Jr., of Adrian, Mich., and Richard Wheeler, of Oswego, N. Y., heads of two of the largest of the firms interested in the potential merger which will bring a large textile mill organization to this city, spent several days recently in Memphis, completing business matters for the project. The pair spent two days with railroad officials, according to the Memphis Commercial Appeal, and from there went to Atlanta to approve building plans as drawn up by Robert & Co., mill engineers.

Should the mill plans and appraisals meet the approval of the Eastern mill officials, it is reported, movement of materials and the necessary preliminary work will be started immediately.

While the names of the mills involved in the merger were not revealed, it is understood that five mills are involved with a total capital of over $3,000,000. The mill being erected will involve an outlay, it is said, of $400,000.

Richmond, Va.—Work on the construction of the new brick building to take care of the recently organized Virginia Underwear Corporation at Martinsville, Va., is progressing rapidly, with Finley & McCoy, Martinsville contractors and builders, in charge of the work.

Only one unit is planned at the present time and as soon as business justifies additional buildings will be erected, it is said. The present structure, which is located on Cleveland avenue, and adjacent to the property of the Pannill Knitting Company, will be 50 by 100 feet and three stories high, not includnig a huge storage loft.

The Virginia Underwear Corporation was organized at Martinsville about two months ago, with Martinsville men and Martinsville capital comprising the concern. The plan is to manufacture cotton underwear and other goods of like nature.

Officers of the concern are S. S. Walker, president and treasurer, and W. L. Pannill, secretary. These two and H. A. Ford, E. C. Whittle and J. E. Howard comprise the board of directors of the company.

Extra Curtailment This Week

A large number of Southern mills mills are further reducing production by standing idle this week, although the shut-down does not appear to be nearly so general as that early in July.

A large part of the narrow sheetings mills are closed, the majority preferring to curtail further in hopes of making a better market. The movement to close this week originated among the narrow sheetings mills, although many other mills are likewise standing.

The best information available showed that in North Carolina only a comparatively few mills have closed for the entire week. A few did, others ran fewer days than they have been doing lately, while the majority appeared to continue theri short time schedules that have been in effect for some time.

In South Carolina, a large number of the more important mills are closed this week. Others are to have their usual vacations within the next several weeks.

Reliable information from Georgia indicated that 90 per cent of the mills there were idle for the entire week.

Mills Working on Welfare Work

Atlanta, Ga.—Mill owners are fostering a movement here calling for close co-operation with all social and welfare workers toward perfecting a welfare improvement program and establishing a permanent organization for promoting advancement of this movement in Georgia, according to a recent announcement by T. M. Forbes, secretary of the Cotton Manufacturers' Association of Georgia.

W. D. Anderson, president of the Bibb Manufacturing Company, of Macon, and a member of the board of directors of the association, presided at a recent meeting in the Atlanta Biltmore Hotel, which was held under the supervision of the industrial welfare committee of the cotton association.

In announcing the program Mr. Forbes stated "conferences have been called in an effort to begin a real constructive program of social and welfare work among the textile mills of Georgia. Practically all the mills have regularly employed workers who look after these matters, and it is believed that this opportunity to exchange ideas and make plans for extending the work will be of great benefit to the mill owners and employees."

Members of the industrial welfare committee sponsoring the movement are P. E. Glenn, Atlanta, chairman; W. D. Anderson, newly-named chairman of the industrial welfare committee of the American Cotton Manufacturers' Association; E. A. McCormick, Gainesville; W. A. Marshall, Lindale; C. W. Coleman, LaGrange; H. O. Davidson, Columbus; G. I. Parmenter, Cedartown, and Miss Katherine Dozier, New Holland.

Rayon Imports Decline 90,000 Pounds in Month

Washington, D. C.—Imports of rayon yarns, threads and filaments during the month of June totalled 810,719 pounds valued at $718,416, compared with 962,401 pounds valued at $824,845 in May, according to preliminary figures compiled by the Textile Division of the Department of Commerce. Imports of waste for the month totalled 241,930 pounds valued at $32,485, against 292,715 pounds valued at $35,303 in May and yarns made from waste totalled 30,553 pounds valued at $19,746, against 10,190 pounds valued at $6,568.

Approximately forty per cent of the June imports of yarns, threads and filaments came from Italy, imports from that country totalling 319,169 pounds valued at $337,587. The Netherlands furnished 175,662 pounds valued at $72,134, followed by Germany with 134,676 pounds valued at $141,912 and France with 105,642 pounds valued at $100,901. Lesser quantities were received from Belgium, Austria, Switzerland, Hungary, the United Kingdom and Canada.

Switzerland was the most important source of supply for rayon waste, imports totalling 60,786 pounds valued at $9,741, followed by Germany with 44,918 pounds valued at $7,110. The United Kingdom with 31,105 pounds valued at $4,992, Austria with 29,100 pounds valued at $2,157 and Canada with 26,438 pounds valued at $2,575. Rayon waste was also imported in small quantities from France, Belgium, Japan and Sweden. All of the imported yarns made from waste came from Switzerland.

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Textile Wet Finishing Machinery
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Mill Supplies
All Orders Given Prompt and Careful Attention

Reliable Humidifying Devices
Since 1888
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Preparation of Rayon Yarns For Weaving

(Continued from Page 13)

sequence a broken filament will continue to fray back along the thread forming a bead, breaking other filaments until finally the thread is worn out. Broken filaments in a thread are difficult to repair during any of the preparatory processes or weaving.

The yarn as it leaves the spinner is made up into bundles consisting of reeled hanks, the processes usually involved for converting the yarn from hanks and preparing it ready for the loom to be used as warp yarn are: 1, winding; 2, warping; 3, sizing; 4, beaming.

For filling yarns the processes usually involved are: 1, winding; 2, pirning.

The order in which the processes are carried out in preparing yarn to be used as warp depends upon what form the yarn is sized in, as at least three methods of sizing are employed: 1, in hanks; 2, during passage from one bobbin to another; 3, in an expanded sheet of threads from one or more beams to another beam.

Sizing of the yarn in hank form is still practiced where only a small number of warp threads are required in the cloth or for colored yarns. The method is unsatisfactory for warps containing large numbers of threads, as the filaments are so liable to be damaged by the severe handling of the hanks in the sizing and drying process, and the tendency of the threads to stick together. There is always a risk of loss of size from the yarn by the treatment in subsequent processes of preparation for the loom, before the yarn is ready for weaving.

When yarn is sized in the hank form the sequence of operations are: 1, sizing the hank; 2, winding from sized hanks to warpers' bobbins; 3, warping from bobbins on to warping reel; 4, running off from reel on to weaver's beam.

"Bobbin to bobbin" sizing is more efficient than hank sizing but is a slow process and a considerable amount of labor is involved. The machines are made to deal with a sizing on the bobbin by a separate small number of ends only, and drying of the yarn is carried out after process. There is a tendency now to employ this system of sizing to a greater extent, but the machines are made on a larger scale, sizing and drying the yarn in one operation, thus saving the after process of drying employed in the former method, giving greater production with a reduced amount of labor involved in the operation. When this method of sizing is employed in the preparation of warp yarns the series of operations are carried out as follows: 1, winding of yarn from hanks to bobbins; 2, sizing of yarn from bobbin to bobbin; 3,, warping from bobbins on to warping reel; 4, running off from reel on to weaver's beam.

Sizing of the yarn in an expanded sheet of threads during their passage from one beam to another has found most favor with manufacturers and sizers of rayon, chiefly because of the greater production and more uniform sizing results than can be obtained with either of the two previous systems. The method is more suitable for sizing warps containing large numbers of ends, and in particular for those fabrics in which the warp is composed wholly of rayon. Several machines embodying special features have been placed on the market as standard machines for effectively sizing the yarn in sheet form.

Some machines are capable of sizing warps containing ends which range from 50 up to 2,000 while others are capable of sizing up to 5,000 ends, sizing, drying, and beaming all in one process. When this system of sizing is resorted to the sequence of operations are: 1, winding from hanks to warpers' bobbins; 2, warping from bobbins on to warping reel; 3, running off from warping reel to back beam; 4, sizing of yarn in sheet form from back beam to weaver's beam.

In the case of preparing weavers' beams containing large numbers of ends, it is sometimes preferred (in order to insure more uniform and better penetration of the size among the threads) to prepare the threads on two or more separate back beams on the warping frame, each containing a measure of the total number of threads required on the weavers' beam, these can be run separately through the sizing machine, and afterwards the beams of sized yar nare combined in a simple running off frame, where the sheets of threads from the several beams are combined to form one sheet of threads to be run on to the weaver's beam. Often the sizing machine is itself used as a running off machine, the threads not being run through the size but over the drynig apparatus, which is slightly heated, this keeps the threads tight and prevents slack ends during the running off process. This is due to the effect of heat causing a contraction of the threads in length, this in practice has been found advantageous in many ways, when having to run warps over the sizing machine.—Textile American.

Why Use a Strong Warp With a Weak Filling?

When garments or flat pieces that have failed to give reasonable service are examined, it not infrequently is discovered that the warp will prove two or even three times stronger than the filling, says George H. Johnson, Director of Research, United Laundry Owners' Association. Sometimes the reverse is true, the filling being far stronger than the warp. The following table contains strength tests, conducted with a number of huck towels, that illustrate this point, each figure being the average of five breaking strengths.

Table I.

	Warp strength in lbs. per in.	Filling strength in lbs. per in.
1	98.8	31.6
2	70.0	28.7
3	46.3	110.8
4	63.0	34.0

From a durability viewpoint it is difficult to understand why such a practice should ever be followed by manufacturers of cloth, even in the production of the cheaper grades of merchandise.

It seems rather apparent, for example, that the life of a fabric is governed more by the weaker yarns that may be present than by the stronger ones. Granting that the warp during and subsequent to weaving is under greater strain in the mill, is it being radical to point out, that when a fabric is made into a garment or into a flat piece and is used, just as much strain falls upon the filling as upon the warp? We think not. What earthly good, for example, is any fabric containing a 70-pound warp strength when a 30-pound filling strength is reduced by the combined action of repeated wear and laundering to a point where it gives way at the slightest strain? A strong warp can be of little assistance at this stage in the career of a fabric. Is the life of a broadcloth shirt during usage governed more by a 90-pound warp strength or by a 24-pound filling strength? Is the useful service of a bath towel dependent more upon a 24-pound warp strength than a 40-pound filling strength?

Recognizing the answer. many a manufacturer in the production of good quality merchandise has employed a far closer balance between the strength of warp and filling. Realizing that a weak filling and a strong warp are just as detrimental to the wearability of a fabric as a weak warp and a strong filling, he has seen to it that yarns that at least are somewhat comparable in resistance to wear are used for both systems in the loom. The following table, again based upon tests conducted with huck toweling, illustrates this fact.

Table II.

	Warp strength in lbs. per in.	Filling strength in lbs. per in.
1	66.5	57.5
2	72.0	64.7
3	60.0	53.0
4	47.3	44.6
5	51.3	61.1
6	58.0	56.3
7	57.0	48.0

Good balance, as far as strength is concerned, does not necessarily mean that the breaking strengths of warp and filling must be identical, but it does mean that the difference

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in strength be a reasonable one. A huck towel with a 72-pound warp and a 64.7-pound filling strength certainly represents a better value as far as wearability is concerned than one having a 70 and 28.7-pound warp and filling strength, respectively. In some cases, the use of a weak warp or filling may be largely a question of cheapening costs and reducing prices. Such an argument does not always hold, however, a fact that is illustrated by the following instance. Two towels were submitted to the laboratory for testing. The warp strengths were very similar, but the filling strength of one was 30 pounds greater than that of the other. And yet the increased cost of the stronger towel was only 20 cents per dozen, amounting to less than 2 cents per towel.

Dyeing of Cotton Plushes

AMONG decorative and upholstery fabrics, cotton plushes occupy an important position on account of their wide utility. For many years they have been chosen for draperies and hangings of various kinds, mainly because of their peculiar softness and lustre that was noticeably wanting in other classes of fabrics.

After leaving the loom cotton plushes pass through a succession of operations leading up to the finished material, the most important of which is the dyeing, which will be touched upon in the present article.

From the loom, the pieces must be carefully handled so that no damage may be inflicted on the nap or pile of the goods, which means that at every stage in the progress, the workmen should be constantly vigilant. Preparing the pieces for dyeing means that they are to be thoroughly boiled out to ensure the complete removal of whatever dressing may have been used; unless the dressing is removed, there is a strong probability that the backs of the pieces will show up unevenly. This boiling out may be effected in kiers or as is commonly done, in open vats with the aid of such substances as soluble oil or diastase. Of course, in some mills, this preparation of the pieces consists of simply adding a soluble oil to the water preliminary to adding the dyes.

The chain of operations comprises boiling-off as above mentioned; then brushing while the cloth is damp both cross-wise and lengthwise so as to untwist the pile; drying and singeing for the purpose of making the pile even; washing to clean the goods after singeing; brushing, and sometimes again singeing; with a final boiling-off.

Dyeing is usually done in a jig, for which purpose dyes of the direct group are commonly employed, and for certain shades, sulfur dyes. In the case of black cotton plushes, it is the custom of some finishers to "top" the dyed cloth with a composition of Prussian blue in linseed oil, which is applied to the pile by means of a felt covered roller. This topping imparts a peculiar blue tone to the pile, which is usually not present as a result of the straight dyeing. Afterwards, the topped pieces are hung in a heated chamber to effect the complete drying of the oil.

For dyeing colors on cotton plushes, after the pieces have been boiled out, and otherwise prepared, the dyebath is made up with the necessary amount of dye for the shade desired and with from ten to twenty per cent of common salt. Dyeing proceeds at a slow boil for about one hour, or until the proper shade and penetration have been obtained. For greens, suitable combinations may be made with National Solantine Yellow 4GL and National Solantine Blue 4GL. These two dyes lend themselves admirably for a wide range of both blues and greens. For stone or drab shades, much used for furniture coverings, combinations of National Solantine Blue 4GL, National Solantine Red 8 BLN and National Erie Fast Yellow WB will be found to meet every requirement. Blacks are obtained by using National Diazine Black VJ, which is applied by the diazotizing and developing process, using National Developer DB, or with National Sulfur Black BG applied by the well-known process for sulfur dyes.

After dyeing and batting, that is beating the pieces with sticks, the pieces are subjected to a shearing for the purpose of evening the pile. The goods are then ready to be folded and boxed.—Dyestuffs, published by National Aniline & Chemical Co.

Across-the-Line Reversing Switch

The General Electric Company announces a new motor control switch suitable for reversing small alternating current motors in cases where the motor can be thrown across the line. It consists of two triple-pole, barrier-type, magnetically operated contactors, mechanically and electrically interlocked, and two hand-reset temperature overload relays mounted on a molded base and enclosed in a drawn-shell enclosing case.

The double-break contactors with silver contacts, operated by a high-speed solenoid, give the switch a very high interrupting capacity with minimum arcing. The new type silver contacts eliminate the need for the shunt straps and, since silver oxide is a conductor, minimize contact resistance.

The two temperature overload relays protect the motor from overheating because of mechanical overload or single-phase operation. These relays are a fixed part of the switch, but have interchangeable heaters. To adapt this swicth for use with a motor of a different rating but the same voltage, it is merely necessary to select heaters corresponding to the motor current.

The enclosing case, finished in black water-japan varnish, has rounded edges and corners which give it a neat appearance. The cover is held in place by two pins at the top, and by a screw at the bottom.

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New Yarns and Modern Machines

(Continued from Page 8)

give varying knitting effects. The best kind of winder is now fitted with special cams to give a very uniform tension indeed, and trouble is extremely unlikley.

Effect of Humidity.

2. The effect of humidity can be clearly seen in a hosiery factory knitting artificial silk. No complete investigation has been made into the effect of changes of temperature and humidity, but if the tension of winding is kept low, the factory temperature uniform and fairly high, and, if possible, the same degree of humidity maintained the trouble of ringing through humidity will only be experienced at rare intervals.

3. Variations in tension on the knitting machine result in ringing when the variations are over short lengths of winding. Differences in panel lengths occur when the tension varies from full bobbins to empty ones. Ballooning eyelets should be used, and with better designed tensions will reduce the trouble to an insignificant extent if used in conjunction with large bobbins up to 6 inches in diameter. The reason why these large bobbins give better knitting has not yet been fully explained, but the experience in many hosiery factories is that the fabric from the knitting machine working from the larger bottle bobbins is much more uniform than from the smaller ones used until recently. The knitting is improved beyond comparison. This happily fits in with the tendency indicated earlier on—that the use of larger bobbins is desirable for the sake of economy of winding and knitting; but it should be realized that in working artificial silk it is always wise to aim at quality and not so much quantity. The former almost invariably leads to the latter. These larger bobbins produce better knitting and enable a greater output to be obtained both on the knitting and winding machinery, and also reduce waste.

4. Knots are always the cause of a large percentage of waste, and the ideal method is to prevent their formation entirely. This is not possible, but the better kinds of winder are fitted with an automatic stop motion to stop the spindles at hank entanglement: consequently no fresh knots are made. There are some in the hank when it is put on the machine, and knots must be made where fresh hanks are started. The trouble from these knots can be reduced by placing the bobbins on one side, so that the yarn does not catch on the knots, as the feeder drops into action. This method, combined with better methods of applying tension on the knitting machine, is employed in most factories.—Manchester Guardian.

Says Rayon Threatens Silk and Wool

(Continued from Page 15)

sion quite naturally leads to new reports of overproduction and of closer competition within the industry. The possibilities of competition within the industry are intensified by the trend of demand toward finer yarns and the general movement to satisfy this demand.

Rayon's Dual Role.

"Toward other textiles, rayon plays a dual role, stimulating demand for them in some directions and competition has shown itself more and more adaptable to use with the old textile fabrics and has proved invaluable in introducing novelty effects which have shown unusual sales appeal. During the last two years the creation of luxury fabrics by French manufacturers and their employment by Paris designers have given the industry a new status. Especially worthy of mention is the notable success of rayon velvets last year which bids well to last through the current summer and they are being followed up by more elaborate and much more extensive lines to be offered for the fall and winter season.

"Other exclusive fabrics which have been created by the use of rayon are wool coatings with designs worked out in artificial silk; window curtains of cotton are similarly treated, and also various materials for interior decoration. Most of these are prestige fabrics and while they are not likely to reach the volume market they serve to remove a certain stigma from rayon that has clung to it as a cheap and artificial liber."

What Laundrymen Do In Sheet Shrinkage, According to Institute

Under present methods of manufacturing and laundering, new sheets when laundering may show a decearse in length, commonly known as shrinkage, says the Cotton-Textile Institute. This reduction in length may continue for several consecutive launderings. At the same time an increase in width may be expected.

Tests with forty-five sheets representing several brands were made in a laundry operated under methods approved by the Laundryowners' National Association. These showed an average shrinkage of more than 4½ per cent after seventy-five launderings. Other tests have shown a decrease in length, in some instances as much as 7½ per cent. Inasmuch as sheets in a cemmercial laundry are placed in the mangle from selvage to selvage, the width is commonly increased while the length diminshes.

Based upon the best available information, a reasonable allowance for shrinkage in the length of 108-inch sheets would be at least 5 inches.

The combined deductions for hemming and a reasonable allow-

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ance for shrinkage in length—each 5 inches—would reduce 108-inch inch sheets to a net useful length of 98 inches. Even this length is not considered sufficient by those who are fastidious in such details. A few simple tests in bed making, and comparison of the size of bed equipment will demonstrate the advantages as well as the economy of longer sheets.

Chinese Boycotting Japan Manufacturers

Shanghai, China.—A boycott by Chinese of Japanese manufactures is the most important feature of the Shanghai piece goods market. This not only renders Japanese shipments difficult, but is forcing holders of this stock to keep it in warehouse and out of the market.

This has brought speculators to the fore and the operations of this element, combined with improved trade demand from Yangtze ports. Ningpo, and local markets, have made the market active at advanced prices. Inquiry is not confined to any particular class of goods. Grays are most in requtst and dealers report substantial recent sales. This situation is particularly welcome, as grays have experienced a quiet period from about the middle of April. In some quarters a forward inquiry has sprung up for goods such as 2/42s yarn,-but this comes from speculators. Past experience has proved that such indents result disastrously and the more cautious dealers will not operate. Little forward business is being booked.

At recent auctions the market has been extremely active and excited, due to speculators on boycott prospects. Italians were two mace up, grays one-quarter mace up, whites 1¾ mace up, and black Venetians 2¼ mace up. There was bidding on speculation from everywhere, and North China seemed as active as other markets, notwithstanding the war there. Chinkiang, Hankow, Cahgsha and Foochow were strong, and there is no doubt that a large percentage of buying was against orders.

Heavyweight grays were the only weak easy feature. This was apparently due to the increased interior likin, duties assessed in Chekiang province. Other weights of grays were in demand. There was a distinctly brighter tone for goods for the Korean trade.

Anthrene Orange RC Paste Now Available

The Newport Chemical Works, Inc., recently placed on the market Anthrene Orange RC Paste, which is claimed to be identical in character and properties with the product classified as Color Index No. 1169 or Schultz No. 792. The value of this type is said to be its extreme fastness to light, in which quality, it is claimed, it surpasses the other Anthrene Oranges. It is described as having, in addition, the other fastnesses which characterize the Anthrene series. Alone it is a brilliant, pleasing, yellowish orange, but, states the announcement, because it is easily reduced and levels well it is suited for combination shades, particularly those of the tan and brown ranges. Its life and brilliance make it particularly desirable for these purposes. Described as unaffected by metals, it is well suited to machine dyeing. Though not recommended for silk, it is a beautiful color for rayon.

Leaflets for the Newport binders, giving directions for application and showing dyeings on both cotton and rayon, may be obtained from the manufacturers.

Seasonal Slackening In Textile Industry

Washington, D. C.—Employment in the textile industry in June fell 5 per cent below the employment level of June, 1927, and five-tenths of 1 per cent below the level of May, according to the figures of employment survey conducted by the Department of Labor.

Pay roll totals in the textile industry in June showed an even greater drop than employment, falling 11 5-10 per cent below the totals of June of last year and two-tenths of 1 per cent below the pay roll level of May.

Employment and pay roll levels in the industry in June as compared with June of last year dropped almost twice as much as did the levels of employment and pay roll totals in all the industries as a whole in the country. Employment in all industries fell only 3.9 per cent in June, as compared with the 5 per cent drop in textile employment, while pay roll totals of the county decreased only 3.3 per cent, as against the decline of 7.5 per cent in the pay rolls of textile mills.

Pacific Mills Report

Pacific Mills reports that in the six months ended June 30, 1928, its cotton goods divisions, generally, continued to operate at a profit but this was more than offset by the effects of unfavorable business conditions on the operations of its worsted division. The net result for the six months, after setting up the usual reserves, was an operating loss of $207,085. However, the company reports an improvement in its general financial position. Net quick assets increased $293,421 in the first half of 1928, and the company purchased an additional $1,299,000 of its outstanding term notes, bringing the total of these notes held in the treasury to $2,799,000. In addition to valuation of inventory substantially below the present market, the company as a precautionary measure also set up a special inventory reserve of $100,000 against possible obsolescence of style goods. This brings the net loss for the six months to $307,085. The surplus account shows a reduction of only $140,000.

Current operations of the worsted division are showing marked imment following a policy of rigid curtailment to permit the reorganization of the physical plant and the reduction of inventory.

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Howard Bros. Mfg. Co.	2
Hunt, Rodney, Machine Co.	23
Hyatt Roller Bearing Co.	Insert
Hotel Imperial	19
—I—	
Iselin-Jefferson Co.	22
—J—	
Jacobs, E. H. & Co.	—
Johnson, Chas. B.	—
—K—	
Kaumagraph Co.	Insert
Keever Starch Co.	—
Klipstein, A. & Co.	—
—L—	
Lambeth Rope Corp.	30
Lane, W. T. & Bros.	39
Langley, W. H. & Co.	32
Lawrence, A. C. Leather Co.	—
Lea, David M. & Co., Inc.	34
Leslie, Evans & Co.	32
Lestershire Spool & Mfg. Co.	—
Lewis, John D.	—
Lincoln Electric Co.	—
Link-Belt Co.	—
Lowell Shuttle Co.	—
—M—	
Marston, Jno. P. Co.	—
Mathieson Alkali Works	—
Mauney Steel Co.	—
Moreland Sizing Co.	35
Morse Chain Co.	39
—N—	
National Aniline & Chemical Co.	—
National Ring Traveler Co.	33
Neutrasol Chemical Corp.	28
Newmann, R. & Co.	16
Newport Chemical Works, Inc.	—
N. Y. & N. J. Lubricant Co.	—
—O—	
Oakite Products, Inc.	—
—P—	
Page Fence & Wire Products Assn.	—
Parker, Walter L. Co.	—
Parks-Cramer Co.	—
Penick & Ford, Ltd.	—
Perkins, B. F. & Son, Inc.	—
Philadelphia Drying Machinery Co.	23
Piccadilly Hotel	30
Polk, R. L. & Co.	—
President Hotel	—
—R—	
Ramsey Chain Co.	Insert
Reeves Bros., Inc.	32
Rhyne, Moore & Thies	—
Roessler & Hasslacher Chemical Co.	31
R. I. Warp Stop Equipment Co.	22
Rice Dobby Chain Co.	38
Robinson, Wm. & Son Co.	—
Rogers Fibre Co.	—
Roy, B. S. & Son	18
—S—	
Saco-Lowell Shops	9
Sandoz Chemical Works, Inc.	18
Sargent's, C. G. Sons Corp.	40
Scott, Henry L. & Co.	30
Seaboard Ry.	—
Seydel Chemical Co.	34
Seydel-Woolley Co.	—
Sipp Machine Co.	40
Sirrine, J. E. & Co.	—
S. K. F. Industries	4
Slip-Not Belting Co.	31
Sonneborn, L. Sons	21
Sonoco Products	—
Southern Ry.	27-29-35
Southern Landscape Service	28
Southern Spindle & Flyer Co.	—
Stafford Co.	—
Standard Nut & Bolt Co.	30
Standard Oil Co.	11
Steel Heddle Mfg. Co.	12
Stein, Hall & Co.	—
Stevens, J. P. & Co., Inc.	32
Stone, Chas. H.	—
Sullivan Hardware Co.	23
—T—	
Takamine Laboratories, Inc.	—
Terrell Machine Co.	—
Textile Finishing Machinery Co.	—
Textile Mill Supply Co.	—
Texas Co., The	—
Timken Roller Bearing Co.	—
Tolhurst Machine Works	19
Tripod Paint Co.	28
Tubize Artificial Silk Co.	—
—U—	
U. S. Bobbin & Shuttle Co.	5
U. S. Ring Traveler Co.	34
Universal Winding Co.	34
—V—	
Veeder-Root, Inc.	16
Victor Ring Traveler Co.	—
Fred'k Vietor & Achelis	22
Viscose Co.	6
Vogel, Joseph A. Co.	—
—W—	
Washburn, Inc.	—
Watts, Ridley & Co.	33
Wellington, Sears & Co.	32
Whitin Machine Works	—
Whitinsville Spinning Ring Co.	2
Williams, J. H. Co.	39
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Wood, T. B. Sons Co.	17
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"Honest we did. I'll show you the cancellation."

Causes of Sleazy Knitting in Full-Fashioned Hosiery

(Continued from Page 12)

more, it is unaffected by the mois-- ture and dampness usually found about the backwinding machines.

Dry Silk and Backwinding Solutions

A perfect backwinding solution must be a complement of the soaking oil and work with it. Many backwinding solutions will not wet-out and mellow silk which has been soaked with various oils.

Some of these solutions do not possess the property of maintaining an even film on the roller of the trough. This means that the mois- and the silk will be wound with wet ture will not be applied uniformly and dry places and uneven drawing or feeding will result.

Knitting mills which lack the proper means of controlling the humidity frequently take the silk directly from the backwinding machine to the knitting machine. This is done to prevent drying out, but the silk has not then had time to mellow and the moisture has not had time to penetrate the silk thread and remains on the surface. The obvious method of correcting this difficulty is to build a humidifying chamber or wrap each cone in wax paper so there will be no surface drying and the moisture will have time to penetrate the silk.

Fine Yarns and Insufficient Courses

The fine gauge chiffons made from three and five thread tram are apt to sufler more from sleazy knitting than is heavier thread hosiery. The finer the gauge the more frequently this trouble occurs. We find that a major portion of the trouble can be traced to using too fine a thread for the gauge of the machine. Knitting insufficient courses per inch is a cause of sleazy knitting closely allied to the use of too fine a thread. Both defects produce a distortion of the loop. The loop will alternately incline to the right and left producing a zig-zag wale which reflects light in different directions. Ofttimes these defects are not observed while the fabric is being knit, as the tension holds the loops correctly.

The moment the tension is released, however, the lines of loop regain their zig-zag form as knitted.

The defect can only be corrected by a careful study of the yarn diameter and needle gauge. Stretching at the boarding operation will help remove the appearance of the crepe effect but the minute the hose is wet-out again the crepe appearance recurs.

Machine Adjustment.

The machine adjustment must be checked from time to time. Frequently there is too much play between the butt of the sinker and the falling bar. Recently knitters have complained that the alignment of the sinkers and needles must be constantly watched and adjustments made to "knock over bits," sinker cams, slur cocks and sinker heads.

These adjustments must be made with increasing frequency as the age of the machine advances. We are of the opinion that this is due to the abuse of the machine by the use of improper lubricants. The finer the gauge of the machine the closer the sinkers, pressers and needles come together The clearances are smaller. In other words, as the gauge increases, the number of needles and sinkers increase and it is more difficult to make these parts accurately. The danger of metal-to-metal contact is increased as the gauge increases, and the problem of lubrication is multiplied. The needle. oil and other lubricating oils must be very fluid or possess a low viscosity but this must not be at a sacrifice of film strength, for it is the film strength of the lubricating oil that prevents the metal-to-metal contact. If metal-to-metal contact is not prevented, the sinkers will soon wear and become uneven, causing loops of varying height, which is only another way of saying sleazy stitches.

Conclusion

As we see it, if the hosiery industry is going to manufacture fine gauge dip dyed stockings, manufacturers must constantly watch their raw silk and insist on even size and hardness of gum. They must use a soaking oil which will not leave the silk in a condition whereby it will stick to the needles. The backwinding oil must be one which will ensure the production of even moist silk of uniform pliability and cones which will not dry out or stick.

All machines must be kept in excellent condition and all parts in perfect alignment. Lastly, the machines must be kept running freely by the use of the proper lubricating oils.

Dates Named for Cotton Character Reports

Dates for the release of reports on the grade, staple and tenderability of cotton ginned during 1928-29 have been announced by the Bureau of Agricultural Economics, United States Department of Agriculture, follow:

Friday, Sept. 28, 1928, 1 p. m., for cotton ginned in the United States prior to Sept. 1, 1928.

Friday, Oct. 26, 1928, 1 p. m., for cotton ginned in the United States prior to Oct. 1, 1928.

Friday, Nov. 30, 1928, 1 p. m., for cotton ginned in the United States prior to Nov. 1, 1928.

Friday, Jan. 4, 1929, 1 p. m., for cotton ginned in the United States prior to Dec. 1, 1928.

Friday, Feb. 15, 1929, 1 p. m., for cotton ginned in the United States prior to Jan. 16, 1929.

Friday, April 10, 1929, 1 p. m., for cotton ginned in the United States prior to March 1, 1929.

The grade and staple length of cotton carried over in the United States on July 31, 1928, will be reported on a date to be announced later by the bureau.

Reports of details for individual States separately will be issued as they can be prepared during the period immediately following issue of the general report for the cotton belt as a whole.

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Manufacture of Two and Threefold Sewing Cotton

(Continued from Page 11)

recesses through which the impurities fall out. The upper braking surface is formed by a loose washer carrying one or more washers which determine the amount of drag on the yarn, the impurities being stripped from the yarn by the outer edges of the braking surfaces and by the edges of the recesses in the lower braking surface. The upper braking surface also has small holes which work the impurities out of the device, so that the appliance is self-clearing. The amount of drag is regulated by altering the number of weighting washers on top of the drag washer. The girl cannot alter the amount of the drag, as the washers are locked at the top of the tension pivot by means of a stop washer and nut. This locking device is designed in such a way that the weighting washers can be changed very quickly according to the counts of the yarn and according to the desired drag. Its advantages are therefore:

(1) absolutely even drag on the yarn;

(2) hard or loose winding at will;

(3) no jumping of the drag washers (as the impurities are automatically cleared out of the device);

(4) effective clearing of the yarn of impurities, fly, motes, etc.;

(5) the amount of drag is easily adjusted in the shortest possible time;

(6) no accumulation of fly, therefore no dirty places in the yarn;

(7) perfect elimination of all the faulty places in the yarn which have not been previously eliminated by the yarn clearer described above;

(8) increased production owing to the ease of threading, reducing the unproductive time taken up by prolonged stoppages, and therefore also:

(9) increased production per girl;

(10) low first cost, the device doing away with felt and such like material;

(11) cost of maintenance practically nil, as the device is almost indestructible.

When the quick traverse doubling winding frame is fitted with all the devices previously mentioned, we have a machine that will prepare the yarn in such a way that we can produce a good sewing thread.

The cross-wound bobbins (or cheeses, as they are now called) are then taken to the ring doubling frame, where they are put into the so-called porcupine creel. This creel consists of a number of fixed pegs which are fastened on wooden laths in a slightly slating position. The cheeses turn on the fixed pegs, thus creating a certain amount of drag. From the porcupine creel, the yarn passes into a trough filled with water, which has the object of thoroughly wetting the yarn. In the trough, the yarn is guided over a glass rod, and thence it passes to the rollers which are brass-covered. The glass rod is arranged to be lifted-out from the off-end of the machine, for easy cleaning of the troughs. There is also another system of wet doubling (called Scotch doubling) which is, however, not used for the manufacture of the 2 and 3-fold sewing cottons in question.

The spindles must be arranged for making the so-called taper top wind for subsequent reeling. They have an inner tube giving the necessary oil-cushion for high speeds, to compensate for the otherwise ill effects of any slight differences in the balance of the load. Besides, the inner tube must be made in such a way that there is not only sufficient space for oil, but also for impurities which should settle in the bottom of the spindle bolster. The spindles are driven by two tin rollers of 10 inch diameter, in order to insure that the band bears on a large surface of the thin rollers and thus pulls well through. In this way the band has also a good grip on the wharve. Instead of the band drive, the drive is now often used, which is still better, but also much more expensive. To insure even twist on both sides of the frame, the second tin roller should be driven from the first one by means of ropes, with a tension device. It goes without saying that in all modern machines, the bearings of the tin roller shafts should be on the ring-lubricating principle.

The ring rails are made of wrought iron to take doubling rings for travelers of ear shape. The ring is greased from below—the ear-shaped traveler passes the grease and takes it forward as required.

The doubling spindles give the necessary twist to the yarn. This twist must left-hand twist, i. e., in the opposite direction to the twist previously given by the spinning frame. As a rule, the counts from 16s upwards are doubled on ring frames, while the coarser counts are often doubled on flyer frames. The twist put into the yarn on the doubling frame may be gathered from the following table which serves as a rough guide. No hard and fast rule can be given, as the manager must decide himself what is best for his market as regards strength and appearance, for more twist will doubtless mean dearer manufacture, but it does not always mean stronger yarn nor better appearance. For all general purposes the table will be found to be a safe all-round guide. After doubling a short length according to the table, the inside manager must decide whether he will stick to the twist given or whether he will put in raather more or less.

The following table gives the twists recommended:

	Twist per inch			Twist per inch	
Cnts.	for 2-folds	For 3-folds	Cnts.	For 2-folds	For 3-folds
10	—	14	22	23	20
12	—	15	24	24	21
14	—	16	28	26	22
16	20	17	32	28	23
18	21	18	36	30	24
20	22	19	40	32	25

The yarn is then reeled on any convenient reeling frame, the description of which is unnecessary. The style of reeling which is best suited for the purpose is the straight style. The yarn must on no account be cross-reeled, because then the yarn could not spread in the polishing machine, nor could the brushes of the polishing machine get at the

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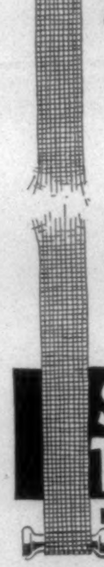

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individual ends, which is absolutely necessary if we desire a well-polished round thread.

The yarn is then bleached or dyed in the hank, as the case may be, i. e., it is bleached for white sewing cotton—and dyed if black sewing cotton is required.

If the yarn is to be bleached, the following processes are necessary:

(1) the hanks are linked together to form a continuous chain for convenience in handling;

(2) the chain is treated with a solution of caustic soda in an ordinary vomiter kier, the strength of the caustic being regulated according to the counts of the yarn;

(3) washing;

(4) plaiting into a cistern with false bottom, with a well underneath containing a solution of bleaching powder. After filling the cistern with the yarn, a perforated cover is placed on top of the yarn. The chemic liquor is then circulated through the yarn by means of a pump;

(5) washing in a similar cistern which also serves for subsequent process;

(6) souring with a dilute solution of sulphuric acid;

(7) washing of the yarn in the souring cistern before removing it;

(8) washing in a subsequent washing machine to get out all traces of acid;

(9) a second boil in the vomiter kier, with a solution of caustic soda;

(10) washing;

(11) chemicking again as described under heading 4;

(12) washing, souring and washing again in the souring cistern, as described above under headings 6, 7 and 8;

(13 washing in the washing machine, to get out the last traces of sour;

(14) getting out the greatest part of the moisture in a hydroextractor;

(15) "stocking" or "dumping" in stocks 3 feet long by 2 feet wide by 2 feet deep, each stock being provided with a large wooden mallet. The yarn is beaten in the stock with a hot solution of soap;

(16) washing in a washing machine;

(17) hydro-extractor;

(20) stove drying;

(21) cooling;

(22) stretching by passing the yarn over hot rollers to take out the curl.

If the yarn is to be dyed, then the processes are of a less complicated nature, but as there are so many different systems, it would lead too far to describe the process here.

After bleaching or dyeing, the yarns are impregnated by hand or by machine, with thread polish prepared as follows:

15 gallons of water,
7 ounces of white soap,
16 ounces hard paraffin.

Boil until well dissolved, and then add:

9 pounds of Indian corn starch which has previously been made into a thin pulp.

Boil everything together until it is well mixed, then cool. This polish must be well rubbed into the yarn and embodied in it by frequent squeezing and wringing of the hanks.

The hanks are then taken to the polishing machine which consists of a series of brushes mounted upon a skeleton cylinder fixed on the main driving shaft (which is driven by an open strap). The hanks are passed round two rollers which are arranged one above the other. The top roller is adjustable horizontally, the bottom roller is fitted with vertical tension arrangements. The horizontal adjustment of the top roller allow of regulating the intensity of the brushing action on the hanks. Hank polishing is no doubt the system which puts the least strain on the individual threads and which allows the finest lustre to be obtained, for the hanks may remain in the machine as long as the attendant requires to obtain the necessary gloss. We have mentioned already (see reeling) that the hanks should be straight wound (not cross wound) to insure that the brushes get at the individual threads. We might have added that the ends must be firmly tied and that the loop holding the hank together must be very loose, so as to allow the hank to spread for the brush to get in between the single threads. There is another point to be watched, i. e., that the tie must not be fastened to the thread itself, but that it must be a so-called "figure-eight tie" one loop passing round the knotted ends, and the other loop encircling the remainder of the ends. In this way we prevent the yarn from being plucked and strained. At the same time it is then easy to find the end for unfastening and winding.

The yarn is then wound on a quick traverse winder, the hanks being put up in the creel below the machine. It should be noted that if ever possible the yarn should not pass any tension motion nor guide except the quick traverse guide.

From the cross-wound cheese made on the quick traverse winder, the yarn passes to the spooling machine which may be a hand spooling machine, or an automatic or semi-automatic machine. The latter types are very expensive, and the hand machine will answer the requirements where the line is only being taken up. Hand spooling machines can be made to take up to 12 spindles and will then allow to make as many as 50 gross 200-yard spools in 8 hours. The hand-machine requires the people to be skilled in order to get spools of good appearance and with the required length of yarn on. An attendant is required for every separate spindle which is kept in motion by means of pedal lever.—The Indian Textile Journal.

Slater Village Plans School.

Plans for a modern school building for the people of the Slater Mill village and Marietta, Greenville county, S. C., are being prepared by Sirrine & Co., mill engineers and architects. The building will represent an expenditure of $12,000. The school will be of brick veneer construction and will contain eight class rooms and an auditorium and will accommodate approximately three hundred pupils.

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Cotton Goods

New York.—Cotton goods markets were quiet during the week. A good deal of price irregularity developed as a result of the lower cotton markets. Some sales of print cloths and sheetings from second hands were reported at an eighth to a quarter cent under prices of the week previous. On the other hand, wide sheetings were firm at higher prices and some very substantial sales were reported.

A great many mills making print cloths, narrow sheetings and carded yarns were expected to stand idle this week. It is believed in the market that the shut down should make for a steadier market and reflects a general attitude of the mill owners to curtail on a more drastic basis until production is more nearly in line with demand. The number of mills idle this week is not as large as during the July 4th close down, but in narrow sheetings and print cloths, the curtailment should have a decidedly strengthening effect upon the market. Many other mills in the South will observe their usual weekly vacation between now and the first of September which will further reduce the amount of goods going to market.

A few larger quantities of coarse yarn cloth sold at firm prices, buyers covering on several wanted makes for which they paid ⅛ cent more than could have been done had price been the main consideration. A few more wide goods sold, among which were included shade and automobile constructions. Quotations were held just as steady as on the day before when one or two constructions were no longer obtainable at concessions from mills. In the print cloths second-hands moved a few small lots of 64x60s at 7⅛ cents, 7 15-16 cents also held for, while mills asked 8 cents. Altogether a fair amount of 68x72s sold at 9⅛ cents and 9 cents was also paid for first hand goods. Buyers covered on a few 80 squares at 11 cents and on 60x48s at 7 cents. The 8.20-yard were moved at 5¼ cents, 6.40-yard 7 cents, 7.15-yard 6⅛ cents. Narrow prints were not active, the inquiry for them including a limited number of constructions.

A number of sheeting sales, in very small lots, were reported, practically all at about full prices. For 31-inch, 5.00 yard, 7, net, paid, with one-eighth less for fair quantities; 5.50 yard sold at 6½, net; 36-inch, 5.00 yard, at 7¼, net, in first hands; 56x60, 4.00 yard, at 9 and at 9¼, net, for different makes; 37-inch, 3.50 yard, sold at 9¾, net; 40-inch, 2.50 yard, sold at 13, net; 40-inch, 2.85 yard, at 11½, net. For 40-inch, 64x68, 3.15 yard, 12¼, net, was paid; 40-inch, 3.75 yard at 9¼ to three-eighths, net; 40-inch, 4.25 yard quoted at 8½, net, with reports that this could be shaded slightly. There were a number of small inquiries for various numbers on the list.

Buying to satisfy immediate needs continued in the cotton duck market, small orders being placed in several constructions for quick goods and little interest being shown beyond nearby positions.

Tire fabrics were only moderately active, some inquiry being current for Americans 23s 5-3-ply on which several mills still held for 48 cents, although it was reported that the price could still be shaded considerably as it had been earlier in the week. Little interest was shown in Egyptians, and factors reported prices firm.

The season-end clean-up of wash fabrics has led to price cutting on limited lots of seasonally styled fabrics. The converters have begun to order small sized lots of fine and fancy goods for next spring but the total volume of yardage placed is comparatively small. The New Bedford mills are still unable to make deliveries and during the week there were some cancellations of orders where deliveries were deferred by agreements between the mills on strike and the buyer of the goods.

Cotton goods prices were as follows:

Print cloths, 28-in., 64x60s	6⅛
Print cloths, 27-in., 64x60s	6
Gray goods, 38½-in., 64x60s	7⅞
Gray goods, 39-in., 80x80s	9⅛
Gray goods, 39-in., 80x80s	11
Dress ginghams	12½a15
Brown sheetings, 3-yd.	12
Brown sh'tgs, 4-yd., 56x60s	9⅞
Brown sheetings, stand.	13
Tickings, 8-oz.	22 a23½
Denims	19
Staple ginghams, 27-in.	10½
Standard prints	9

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The Yarn Market

Philadelphia, Pa.—The yarn market showed very little change during the week. There was some increase in inquiry and sales were slightly better at the week end. Buyers continued to make strong efforts to secure lower prices. Most of their bids were 1 to 2 cents under spinners' asking prices. Some cheaper sales were reported here, but reports from South indicated that the majority of spinners were holding prices at almost unchanged levels.

Buyers complained that spinners had not lowered prices in proportion to the last decline in cotton. Spinners asserted, however, that prices are still much too low and lack much of being on a parity with present cotton prices. Some of the dealers here stated that if they could accept business at prices offered by buyers they could have sold two months business during the week. Spinners saw no advantage in selling at buyers' prices and aside from some sales from stock, very little new business was reported on a lower basis.

It is not believed here that any new developments will come in the yarn market until the trade has more definite information of the cotton crop. Already there is considerable talk among buyers of awaiting the first government condition report on August 8 before considering further yarn business.

Actual sales were small. Knitters' prices were too low to interest most spinners. The weaving trades took moderate quantities of yarn in small lots for quick shipment, but no important purchases were reported.

Although carded yarns occupy a weak position at the moment, combed yarns appear to be weaker than carded and it was admitted by local sellers of combed yarns that buyers were frequently making their own price terms for small current purchases. Even the quoted prices for combed yarns, it is said, are now from 3 to 5 cents a pound below what it cost the spinners to make the yarn. In mercerized yarns, there is a similar lack of action. Agreement is generally voiced with the theory that improved demand for cotton goods must precede revival in yarns, unless cotton makes a spectacular advance during August.

Sothern Single Skeins.

4-8s	33
10s	33½
14s	34
16s	34½
20s	36
24s	37½
26s	39
30s	40
40s	48

Southern Two-ply Skeins.

4s-8s	33
10s	33½
12s	34
14s	35
16s	35½
20s	36½
24s	39
26s	39½
30s	41
40s	48½
50s	58

Southern Single Warps

4s-8s	34
10s	34½
12s	34½
14s	35
16s	35½
20s	36½
30s	40
40s	49

Southern Two-ply Warps

8s	33½
10s	34
12s	35
14s	35½
16s	36
20s	36½
24s	38½
26s	39
30s	41

Southern Two-ply Combed Peeler.
Southern Frame Spun Carded Yarn on Cones—Cotton Hosiery Yarns.

8s	32
10s	32½
12s	33
14s	33½
16s	34
18s	34½
20s	35
22s	35½
24s	37
26s	38
30s	40
40s	48
8s	44
20s	48
30s	53
36s	54
38s	55
40s	56
50s	62
60s	66
70s	76
80s	87

Southern Two-pty Hard Twist Combed Peeler Weaving Yarns

8-12s	46
20s	48
30s	53
36s	54
38s	56
40s	57
50s	60
60s	66
70s	80
80s	85

Southern Combed Peeler Single Yarn on Cones.

10s	42
12s	42½
14s	43
16s	43½
22s	46
24s	47½
26s	49
28s	50
38s	55
40s	56
50s	62
60s	67
70s	80

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- **Dobby Chain—**
  - Rice Dobby Chain Co.
- **Dobby Straps—**
  - E. F. Houghton & Co.
- **Doffing Boxes—**
  - Rogers Fibre Co.
- **Doublers—**
  - Saco-Lowell Shops
  - Textile Finishing Machinery Co.
  - Universal Winding Co.
- **Doublers (Yarn)—**
  - Foster Machine Co.
- **Drives (Silent Chain)—**
  - Charles Bond Co.
  - Link-Belt Co
  - Morse Chain Co.
  - Ramsey Chain Co., Inc.
- **Drop Wires—**
  - Crompton & Knowles Loom Works
  - Draper Corporation.
  - Greist Mfg. Co.
  - R. I. Warp Stop Equipment Co.
- **Dryers (Centrifugal)—**
  - Roy, B. S. & Son Co.
  - Tolhurst Machine Co.
- **Dyeing, Drying, Bleaching and Finishing Machinery—**
  - H. W. Butterworth & Sons Co.
  - Cocker Machine & Foundry Co.
  - Chemical & Dye Corp.
  - E. I. Du Pont de Nemours & Co., Inc.
  - General Dyestuffs Corp.
  - A. Klipstein & Co.
  - John D. Lewis
  - National Aniline & Chemical Co.
  - Newport Chemical Works
  - Sandoz Chemical Co.
  - Chas. H. Stone
  - Wolf, Jacques & Co.
- **Dye Works—**
  - Franklin Process Co.
- **Electrical Engineers—**
  - R. H. Bouligny, Inc.
- **Electric Fans—**
  - Allis-Chalmers Mfg. Co.
  - General Electric Co.
- **Electric Hoists—**
  - Allis-Chalmers Mfg. Co
- **Electric Lighting—**
  - Allis-Chalmers Mfg. Co.
  - General Electric Co.
- **Electric Motors—**
  - Allis-Chalmers Mfg. Co.
  - Fairbanks-Morse & Co.
  - General Electric Co.
  - Lincoln Electric Co.
- **Electrical Engineers—**
  - Harrison-Wright Co.
- **Electric Supplies—**
  - General Electric Co.
- **Elevators—**
  - Link-Belt Co.
- **Engineers (Mill)—**
  - ——See Architects and Mill Engineers
- **Engineers (Ventilating)—**
  - American Moistening Co.
  - Bahnson Co.
  - Carrier Engineering Corp.
  - Paks-Cramer Co.
  - See also Ventilating Apparatus.
- **Engines (Steam, Oil, Gas, Pumping)—**
  - Allis-Chalmers Mfg. Co.
  - Sydnor Pump & Well Co.
- **Extractors—**
  - Philadelphia Drying Machinery Co.
  - Tolhurst Machine Works
- **Fences (Iron and Wire)—**
  - Page Fence and Wire Products Assn.
- **Fibre Specialties—**
  - Rogers Fibre Co.
- **Finishing Compounds—**
  - Arabol Mfg. Co.
  - Arnold, Hoffman & Co., Inc.
  - Borne, Scrymser Co.
  - D. & M. Co.
  - Hart Products Corp.
  - E. F. Houghton & Co.
  - Seydel Chemical Co.
  - Seydel-Woolley Co.
  - L. Sonneborn Sons Co.
  - Wolf, Jacques & Co.
- **Finishing Machinery—**
  - ——See Dyeing, Drying, Bleaching and Finishing
  - Philadelphia Drying Machinery Co.
- **Flat Wall Paint —**
  - E. I. du Pont de Nemours & Co., Inc.
- **Fluted Rolls—**
  - Collins Bros. Machine Co.
  - Fales & Jenks Machine Co.
  - H & B American Machine Company.
  - Saco-Lowell Shops
  - Whitin Machine Works
  - Woonsocket Machine & Press Co., Inc.
- **Flyer Pressers and Overhaulers—**
  - Saco-Lowell Shops
  - Southern Spindle & Flyer Co.
  - Whitin Machine Works
  - Woonsocket Machine & Press Co., Inc.
- **Flyers—**
  - H & B American Machine Company.
  - Saco-Lowell Shops
  - Southern Spindle & Flyer Co.
  - Whitin Machine Works
- **Frames—**
  - Steel Heddle Mfg. Co.
- **Friction Clutches—**
  - ——See Clutches
- **Friction Leathers—**
  - E. F. Houghton & Co.
- **Garment Dyeing Machines—**
  - Klauder Waldon Dyeing Machine Division, H. W. Butterworth & Sons Co
- **Garnett Roll Grinders—**
  - B. S. Roy & Son Co.
- **Gearing (Silent Flexible)—**
  - Link-Belt Co.
- **Gears—**
  - Charles Bond Co.
  - Ferguson Gear Co.
  - Link-Belt Company.
- **Grab Buckets—**
  - Link-Belt Co.
- **Greases—**
  - Arabol Mfg. Co.
  - Borne, Scrymser Co
  - E. F. Houghton & Co.
  - N. Y. & N. J. Lubricant Co.
  - Wm. C. Robinson & Son Co.
  - L. Sonneborn Sons Co.
  - Wolf, Jacques & Co.
- **Grease Cups—**
  - Link-Belt Company.
- **Gudgeon Rolls—**
  - Easton & Burnham Machine Co
  - Washburn
  - Roy, B. S. & Son Co.
- **Grinding Wheels**
  - E. C. Atkins & Co
  - Perkins, B. F. & Sons, Inc.

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Philadelphia Drying Machinery Co.
Rodney Hunt Machine Co.
Textile Finishing Machinery Co.

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Bosson & Lane

Hand Knotters—
E. C. Atkins & Co.
Barber-Colman Co.

Hand Stripping Cards—
Howard Bros. Mfg. Co.

Hangers (Ball and Socket)—
Charles Bond Co.
Link-Belt Company.
T. B. Wood's Sons Co.

Hangers (Shaft)—
Charles Bond Company
Link-Belt Company.
T. B. Wood's Sons Co.

Hardware Supplies—
Textile Mill Supply Co.

Harness Twine—
Garland Mfg. Co.

Harness and Frames—
——See Heddles and Frames

Harness Leathers—
E. F. Houghton & Co.

Heddles and Frames—
Emmons Loom Harness Co.
Garland Mfg. Co.
Howard Bros. Mfg. Co.
Steel Heddle Mfg. Co.
J. H. Williams Co.
T. C. Entwistle Co.

Hosiery Drying Forms—
The Philadelphia Drying Machinery Co.
J. H. Williams Co.

Hosiery Dyeing Machines—
Kaulder Weldon Dyeing Machine Division, H. W. Butterworth & Sons Co.

Humidifiers—
American Moistening Co.
Bahnson Co
Carrier Engineering Corp.
Parks-Cramer Co.

Hydro-Extractors—
Tolhurst Machine Co.

Hydrogen Peroxide—
Roessler & Hasslacher Chemical Co.

Hydrosulphites—
Wolf, Jacques & Co.

Indigo Dyeing Machinery—
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Cocker Machine & Foundry Co.
Textile Finishing Machinery Co.

Kettles (Dye)—
Briggs-Shaffner Co.

Kettles (Mixing)—
Briggs-Shaffner Co.

Kettles (Starch)—
Briggs-Shaffner Co.

Knit Goods Finishing Machines—
Kaumagraph Co.

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Arabol Mfg. Co.
Borne, Scrymser Co.
E. F. Houghton & Co.

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Barber-Colman Co.

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Southern Landscape Service.

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Washburn

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Graton & Knight Co.
E. H. Jacobs Mfg. Co.

Leather Strapping—
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Graton & Knight Co.
E. F. Houghton & Co.

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E. F. Houghton & Co.
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Arnold, Hoffman & Co., Inc.
Mathieson Alkali Works. Inc.

Looms—
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Stafford Co., The

Loom Drop Wires—
Crompton & Knowles Loom Works
Draper Corporation.
Greist Mfg. Co.
R. I. Warp Stop Equipment Co.
Steel Heddle Mfg. Co.

Loom Harness—
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Garland Mfg. Co.
Steel Heddle Mfg. Co.

Loom Pickers—
Charles Bond Co.
Garland Mfg. Co.
Graton & Knight Co.
E. H. Jacobs Mfg. Co

Loom Reeds—
Emmons Loom Harness Co.
Steel Heddle Mfg. Co.

Loom Supplies—
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Draper Corporation.
Emmons Loom Harness Co.
E. F. Houghton & Co.
E. H. Jacobs Mfg. Co.

Lubricants—
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E. F. Houghton & Co.
E. H. Jacobs Mfg. Co.

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Textile Finishing Machinery Co.

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Curtis & Marble Machine Co.
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Mercerizing Machinery—
H. W. Butterworth & Sons Co.
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Textile Finishing Machinery Co.

Metal Paint—
E. I. du Pont de Nemours & Co., Inc.

Meters—
Allis-Chalmers Mfg. Co.
General Electric Co.

Mill Architects—
——See Architects.

Mill Lighting—
——See Electric Lighting.

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Arnold, Hoffman & Co., Inc.
Corn Products Refining Co.
Keever Starch Co.
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Stein, Hall & Co.

Mill Supplies—
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Dixon Lubricating Saddle Co.
Garland Mfg. Co.
Greist Mfg. Co.
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Mill Trucks—
W. T. Lane & Bros.

Mill White—
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Howard Bros. Mfg. Co.

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Allis-Chalmers Mfg. Co.
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Arnold, Hoffman & Co., Inc.
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Wolf, Jacques & Co.

Opening Machinery—
H. & B. American Machine Co.
Saco-Lowell Shops
Whitin Machine Works

Overhaulers—
Saco-Lowell Shops
Southern Spindle & Flyer Co.

Overseaming and Overedging Machines—
Southern Spindle & Flyer Co.

Packing Cases (Wood)—
David M. Lea & Co., Inc.

Paints—
DuPont de Nemours Co., E. I.
The Glidden Co.
Tripod Paint Co.

Patents—
Paul B. Eaton

Picker Gears—
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Pickers (Leather)—
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Pickers and Lappers—
H & B American Machine Company.
Saco-Lowell Shops
Whitin Machine Works
Woonsocket Machine & Press Co., Inc.

Picker Loops—
E. H. Jacobs Mfg. Co., Inc.

Picker Sticks—
Charles Bond Co.
Garland Mfg. Co.

Piece Dyeing Marhinery—
H. W. Butterworth & Sons Co.
Cocker Machinery & Foundry Co.
Rodney Hunt Machine Co.
Textile Finishing Machinery Co.

Pipe and Fittings—
Parks-Cramer Co.

Portable Elevators—
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Pinboards—
Rodney Hunt Machine Co.

Preparatory Machinery (Cotton)—
Draper Corporation.
H. & B. American Machine Co
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Washburn
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Woonsocket Machine & Press Co., Inc.

Presses—
Collins Bros. Machine Co.
Dunning & Boschert Press Co., Inc.
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Saco-Lowell Shops

Power Transmission Machinery—
Allis-Chalmers Mfg. Co.
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Hyatt Roller Bearing Co.
Link-Belt Company.
Morse Chain Co.
Ramsey Chain Co., Inc.
T. B. Wood's Sons Co.

Porcelain Guides and Parts—
Rodney Hunt Machine Co.

Printing Machinery—
Briggs-Shaffner Co.

Pulleys (Cast Iron)—
Charles Bond Co.
Link-Belt Company.
T. B. Wood's Sons Co.

Pumps (Boiler Feed; also Centrifugal)—
Allis-Chalmers Mfg. Co.
Sydnor Pump & Well Co.

Quillers—
Crompton & Knowles Loom Works
Universal Winding Co.

Quill Cleaners—
Terrell Machine Co.

Quill Boards—
Washburn

Raw Stock Machines—
Klauder Weldon Dyeing Machine Division, H. W. Butterworth & Sons Co.

Rayon, Celanese, Artificial Silk—
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Celanese Corp. of America
Commercial Fibre Co.
Duplan Silk Corp.
E. I. DuPont de Nemours & Co.
The Viscose Co.

Receptacles—
Economy Baler Co.
Rogers Fibre Co.

Reeds—
Charlotte Mfg. Co.
Emmons Loom Harness Co.
Textile Mill Supply Co.

Reels—
H. W. Butterworth & Sons Co.
Rodney Hunt Machine Co.

Rings—
Draper Corporation.
H & B American Machine Company.
Saco-Lowell Shops
Whitinsville Spinning Ring Co.

Ring Spinning Frames—
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H. & B. American Machine Co.
Saco-Lowell Shops
Textile Finishing Machinery Co.
Whitin Machine Works

Ring Traveler—
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National Ring Traveler Co.
U. S. Ring Traveler Co.
Victor Ring Traveler Co.

Roller Leather—
A. C. Lawrence Leather Co.
R. Newmann & Co.

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Rolls—
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Falas & Jenks Machine Co.
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Rodney Hunt Machine Co.
Saco-Lowell Shops
Southern Spindle & Flyer Co.
Textile Finishing Machinery Co.
Washburn.
Whitin Machine Works
Woonsocket Machine & Press Co., Inc.

Rolls (Metal)—
Rodney Hunt Machine Co.

Rolls (Rubber)—
Rodney Hunt Machine Co.

Rolls (Wood)—
Rodney Hunt Machine Co.
Washburn.

Roller Bearings—
Hyatt Roller Bearing Co.
Timken Roller Bearing Co.

Rope Drives—
T. B. Wood's Sons Co.

Round Leather Harness Straps—
E. H. Jacobs Mfg. Co., Inc.

Roving Cans and Boxes—
Rogers Fibre Co.

Roving Machinery—
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Saco-Lowell Shops
Whitin Machine Works
Woonsocket Manhine & Press Co., Inc.

Saddles —
Dixon Lubricating Saddle Co.

Sanitary Equipment—
Vogel, Joseph A. Co.

Sanitary Fountains—
——See Drinking Fountains.

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Arabol Mfg. Co., The
Bosson & Lane
Ford, J. B. Co.
E. F. Houghton & Co.

Scrubbing and Cleaning Powders—
Oakite Products, Inc.

Sesquicarbonate of Soda—
Mathieson Alkali Works, Inc.

Selling Agents (Cotton Goods)—
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Wellington, Sears & Co.

Sewing Machines and Supplies—
Curtis & Marble Machine Co.

Shafting, Hangers, Etc.—
——See Power Transmission Machinery

Shear Grinders—
B. S. Roy & Son Co.

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H & B American Machine Company.
Saco-Lowell Shops
Washburn

Shuttles—
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Draper Corporation.
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Morse Chain Co.
Ramsey Chain Co.

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Textile Finishing Machinery Co.

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Haberland Mfg. Co.
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Wolf, Jacques & Co.

Sizing Compounds—
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Arnold, Hoffman & Co., Inc.
Bosson & Lane
Corn Products Refining Co.
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Haberland Mfg. Co.
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Seydel-Woolley Co.
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H & B American Machine Company
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Textile Finishing Machinery Co

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Arabol Mfg. Co.
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Arnold, Hoffman & Co., Inc.
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Mathieson Alkali Works, Inc.
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Wolf, Jacques & Co.

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Sodium Peroxide—
The Roessler & Hasslacher Chemical Co.

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Borne, Scrymser Co.

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Seydel Chemical Co.
Wolf, Jacques & Co.

Spindles—
Collins Bros. Machine Co
Draper Corporation.
Fales & Jenks Machine Co.
H & B American Machine Company
Saco-Lowell Shops
Southern Spindle & Flyer Co.
Whitin Machine Works

Spindle Repairers—
Collins Bros. Machine Co.
Draper Corporation.
Fales & Jenks Machine Co.
H & B American Machine Company.
Saco-Lowell Shops
Southern Spindle & Flyer Co.

Spinning Frame Saddles—
Dixon Lubricating Saddle Co.

Spinning Frame Top Rolls (Wood)—
Washburn

Spinning Rings—
Collins Bros. Machine Co.
Draper Corporation.
Fales & Jenks Machine Co.
H & B American Machine Company.
Saco-Lowell Shops
Whitin Machine Works
Whitinsville Spinning Ring Co.

Spinning Tapes—
American Textile Banding Co.
Barber Mfg. Co.
Georgia Webbing & Tape Co.
Lambeth Rope Corp.

Spools—
David Brown Co.
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Lestershire Spool & Mfg. Co.
Walter L. Parker Co.
Steel Heddle Mfg. Co.
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Spoolers—
Draper Corporation.

High Speed Warpers—
Barber-Colman Co.
Easton & Burnham Machine Co.
Eastwood, Benj. Co.
Saco-Lowell Shops
Whitin Machine Works

Spooler Tensions (Filling Wind)—
Foster Machine & Foundry Co.

Sprockets—
Cocker Machine & Foundry Co.
Link-Belt Company.

Sprockets, Silent Chain—
Link-Belt Co.
Morse Chain Co.

Squeeze Rolls—
H. W. Butterworth & Sons Co.
Cocker Machine & Foundry Co.
Rodney Hunt Machine Co.
Textile Finishing Machinery Co.

Starch—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Corn Products Refining Co.
Keever Starch Co.
Penick & Ford, Ltd.
Stein, Hall & Co.

Steel (Electric Furnace)—
Timken Roller Bearing Co.

Steel (Open Hearth)—
Timken Roller Bearing Co.

Steel (Special Analysis)—
Timken Roller Bearing Co.

Stencil Machines—
A. J. Bradley Mfg. Co.

Stencil Papers—
A. J. Bradley Mfg. Co.
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Klauder Weldon Dyeing Machine Division, H. W. Butterworth & Sons Co.
Cocker Machine & Foundry Co.

Tanks—
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Rodney Hunt Machine Co.
Textile Finishing Machinery Co.

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Lambeth Rope Corp.

Temperature Regulators, Pressure—
Taylor Instrument Cos.

Temples—
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B. F. Perkins & Son, Inc.
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Textile Castings—
H. W. Butterworth & Sons Co.
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Textile Finishing Machinery Co.

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Rhyne, Moore & Thies

Textile Dryers—
American Moistening Co.

Textile Gums—
Arabol Mfg. Co.
Stein, Hall & Co.
Chas. H. Stone
Wolf, Jacques & Co.

Textile Machinery Specialties—
H. W. Butterworth & Sons Co.
Rodney Hunt Machine Co.
Textile Finishing Machinery Co.

Textile Soda—
J. B. Ford Co.
Mathieson Alkali Works

Thermometers—
Taylor Instrument Cos.

Thermostats—
Taylor Instrument Cos.

Top Rolls For Spinning Frames—
H & B American Machine Company.
Saco-Lowell Shops
Washburn

Trademarking Machines—
Curtis & Marble Machine Co.

Transfer Stamps—
Kaumagraph Co.

Transmission—
S K F Industries.
T. B. Wood's Sons Co.

Transmission Belts—
Charles Bond Co.
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E. F. Houghton & Co.

Transmission Machinery—
Allis-Chalmers Mfg. Co.
Link-Belt Company.
Ramsey Chain Co., Inc.
T. B. Woods Sons Co.

Toilets—
Vogel, Joseph A. Co.

Transmission Silent Chain—
Link-Belt Co.
Morse Chain Co.
Ramsey Chain Co., Inc.

Traveler Cups—
Whitinsville Spinning Ring Co.

Trucks (Mill)—
W. T. Lane & Bros.
Rogers Fibre Co.

Trucks for Pin Boards—
Washburn

Tubes (Paper)—
Sonoco Products Co.

Turbines (Steam)—
Allis-Chalmers Mfg. Co.

Tubing (Seamless Steel)—
Timken Roller Bearing Co.

Twister Rings—
Draper Corporation.
Saco-Lowell Shops
Whitinsville Spinning Ring Co.

Twisting Machinery—
Collins Bros. Machine Co.
Draper Corporation.
H & B American Machine Company
Saco-Lowell Shops
Whitin Machine Works

Varnishes—
The Glidden Co.

Ventilating Apparatus—
American Moistening Co.
Parks-Cramer Co.
The Philadelphia Drying Machinery Co.

Warp Drawing Machines—
Barber-Colman Co.

Ventilating Fans—
B. F. Perkins & Son, Inc.

Warpers—
Barber-Colman Co.
Cocker Machine & Foundry Co.
Crompton & Knowles Loom Works
Draper Corporation.
Easton & Burnham Machine Co.
T. C. Entwistle Co.
Saco-Lowell Shops

Warp Conditioners—
E. F. Houghton & Co.

Warp Dressing—
Arabol Mfg. Co.
Arnold, Hoffman & Co., Inc.
Bosson & Lane
Hart Products Corp.
E. F. Houghton & Co.
Seyel-Woolley Co.
L. Sonneborn Sons, Inc.
Chas. H. Stone

Warp Sizing—
Arabol Mfg. Co.
Borne, Scrymser Co.
E. F. Houghton & Co
Stein, Hall & Co.
Chas. H. Stone
Wolf, Jacques & Co.

Warp Stop Motion—
Draper Corporation.
R. I. Warp Stop Equipment Co.

Warp Tying Machinery—
Barber-Colman Co.

Warpers (Silk or Rayon)—
Eastwood, Benj. Co.
Sipp Machine Co.

Washers (Fibre)—
Rogers Fibre Co.

Waste Reclaiming Machinery—
Saco-Lowell Shops
Whitin Machine Works
Woonsocket Machine & Press Co., Inc.

Waste Presses—
Economy Baler Co.

Water Controlling Apparatus—
Rodney Hunt Machine Co.

Water Wheels—
Allis-Chalmers Mfg. Co.

Weighting Compounds—
Arabol Mfg. Co.
Bosson & Lane
General Dyestuff Copr.
Hart Products Corp.
Marston, Jno. P. Co.
Seydel Chemical Co.
Seydel Woolley Co.
L. Sonneborn Sons, Inc.
Wolf, Jacques & Co.

Welding Apparatus (Electric Arc)—
Lincoln Electric Co.

Whizzers—
Tolhurst Machine Works

Winders—
Abbott Machine Co.
Eastwood, Benj. Co.
Foster Machine Co.
Universal Winding Co.

Winders (Skein)—
Foster Machine Co.
Sipp Machine Co.

Windows—
Carrier Engineering Corp.
Parks-Cramer Co.

Yarn Conditioning Machines—
The Philadelphia Drying Machinery Co.
C. G. Sargent's Sons Corp.

Yardage Clocks—
T. C. Entwistle Co.
Saco-Lowell Shops

Yarn Tension Device—
Eclipse Textile Devices, Inc.
Saco-Lowell Shops

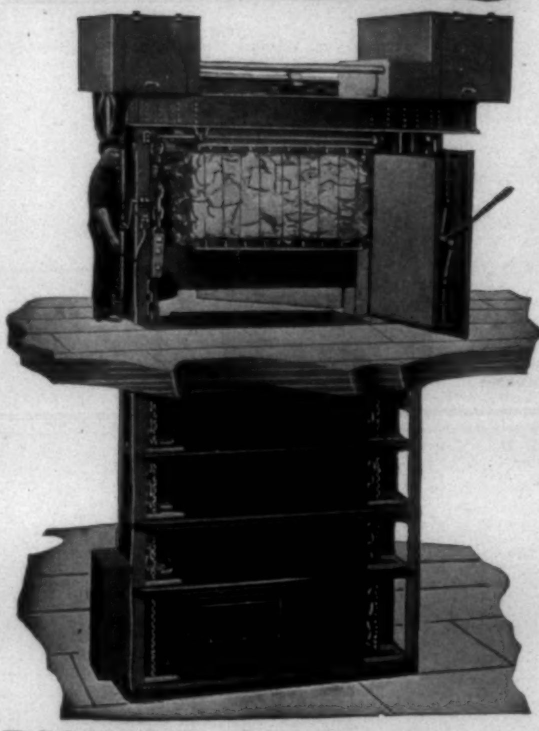
Yarn Presses—
Dunning & Boschert Press Co., Inc.
Economy Baler Co.

Yarns (Cotton)—
American Yarn and Processing Co.
Mauney Steel Co.

Yarns (Mercerized)—
American Yarn and Processing Co.
Mauney Steel Co.

Yarn Testing Machines—
Scott, Henry L. & Co.

ALL STEEL
ECONOMY
FIRE PROOF
Waste Press



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Hydraulic
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Saves
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Presses for Waste, Cloth, Yarn, etc.

Largest Line in U. S.

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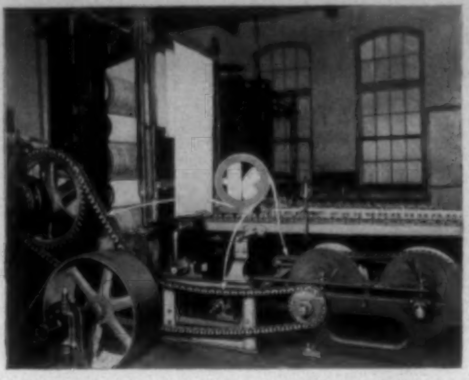

15 and 25 H. P. Morse Silent Chain Textile Drives from counter shaft to rolls, also from countershaft to Reeves reducer to tenter

Hit or miss application of power drives often results in increased power consumption. Selecting the drive that will meet your requirements most economically is an engineering problem. Morse Transmission Engineers are experienced in designing drives for textile requirements.

The new Morse Data Book contains valuable information on the design and application of Morse Drives. Ask the nearest office for a copy.

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New Orleans, La.
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Omaha, Neb.
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Pittsburgh, Pa.
San Francisco, Cal.
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2760

MORSE SILENT CHAIN DRIVES

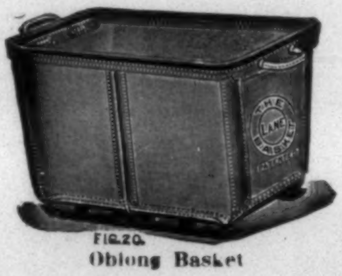

FIG.20.
Oblong Basket

LANE

Patent Steel Frame

Canvas Mill Baskets

Were first used in a Fall River Mill in 1898.

Other types of mill receptacles had been tried but the Lane Canvas Basket with its perfectly smooth surfaces, its slightly yielding, flexible sides and frame, and above all its strength and durability have seemed to meet all the requirements of the textile mill as no other basket had done.

W. T. Lane & Brothers

Originators and Manufacturers of Canvas Baskets for 25 years

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SUPER STRENGTH

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SHUTTLES

comes from

★Positive Threading Eyes
—they do not un-thread

★Air-dried Wood
—it's thoroughly seasoned

★"Not-a-break" Springs
—with Gibralter-like strength

A trial order will prove to you how smoothly they work in your looms

Makers of Heddles and Heddle Frames, too

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Millbury, Mass.
GEORGE F. BAHAN, Southern Representative
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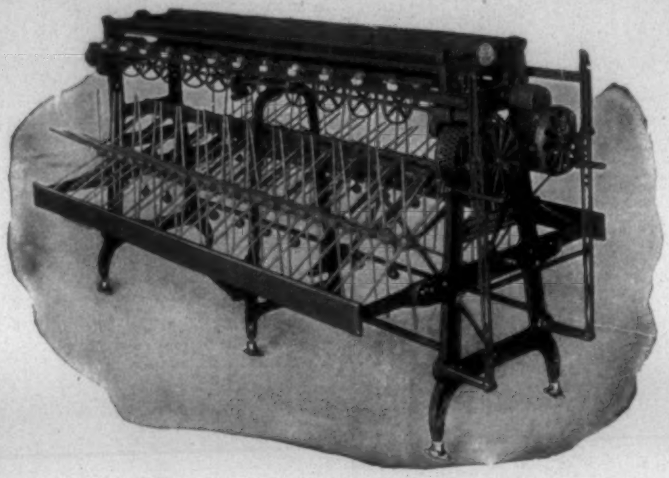

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Rayon Skein Winder

ITS TRADE A MARK SIPP

—OILLESS SPINDLE BEARINGS—

Sipp winders are equipped with patented oilless spindle bearings.

Features

Oilless	Noiseless
Reversible	Renewable

Saves wear on ends of the spindles.

Specially designed to wind
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from skein to spool

Steel pipe frame construction

Patented rigid traverse motion

Single or double drive

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Also Rayon Warpers (heavy type) various sizes

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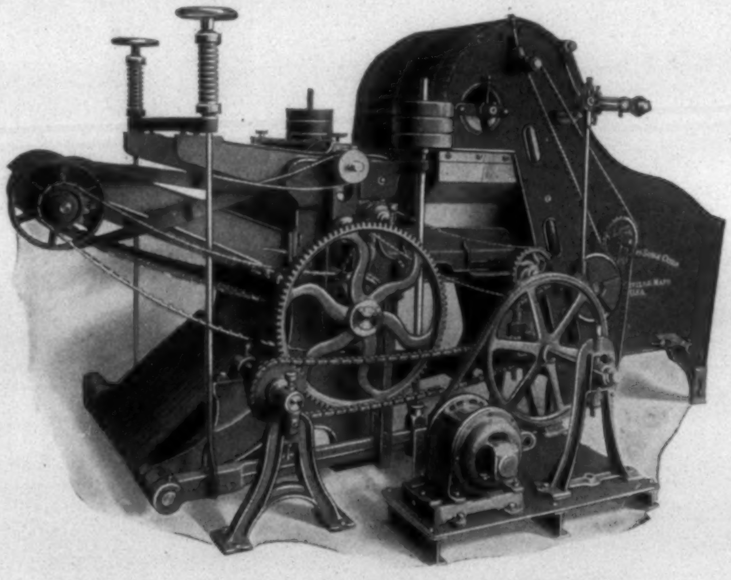

Continuous Automatic Extractor

This apparatus consists of a ruggedly mounted pair of 12" diameter compound lever weighted squeeze rolls, with adjustable feed and doffer aprons, to which bleach or dye liquor saturated cotton or wool is continuously delivered by an Automatic Feed and by which the maximum percentage of such contained liquid is squeezed from the fibres and runs to waste or is recovered as the situation demands.

Why not employ this modern Extractor in your dyehouse?

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Builders of Cotton Stock Drying Machines
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